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ABSTRACT

Intended for use by educators and the public, this report interprets the findings of two research studies on competency-based vocational education (CBVE) in Kentucky secondary schools: "The Development of an Instrument to Measure Student Attitudes toward Competency-Based Individualized Instructional Modules," by John C. Thomas, and "CBVE: A Study to Measure Its Effectiveness in Kentucky," by the Bureau of Vocational Teacher Education at Western Kentucky University. First, the history and background of Kentucky CBVE are given, including a rationale for its implementation, a description of the model delivery system currently being developed to provide CBVE statewide, lists of general goals and specific objectives for 1976-78, and a summary of progress since 1976. The next section describes the two research studies, and makes recommendations for future research based on their conclusion that CBVE enables students to learn more, learn faster, and perform skills at a higher level. A more detailed analysis of the studies' data is given in subsequent sections, delineating sample populations, statistical validity, and types of survey questions. The last section deals with the instructional modules that are being developed to serve as a delivery system for CBVE in nine occupational areas (bank teller, secretary, tractor mechanics, food preparation, cashier-checker, auto body, child care, machine shop, and carpentry). (ELG)

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COMPETENCY BASED VOCATIONAL EDUCATION

A REPORT ON RESEARCH ON THE EFFECTIVENESS OF COMPETENCY BASED VOCATIONAL EDUCATION IN KENTUCKY

Introduction

One of the objectives of CBVE for the 1976-78 Biennium was to conduct research to determine the effectiveness of competency based vocational education in Kentucky. During this time, one study has been completed and Phase I of a second study has provided conclusions which relate to the effectiveness of Kentucky's CBVE program.

Directions

This report was introduced by Module T2 - 1977,"Effective- of CBVE." The module included highlights of the results of research on the effectiveness of Competency-Based Vocational Education.

Objective

This report was written to interpret and synthesize the results of two research studies. It is an attempt to facilitate utilization of findings of research projects by educators and decision makers.

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RESEARCH COORDINATING UNIT
BUREAU OF VOCATIONAL EDUCATION
KENTUCKY DEPARTMENT OF EDUCATION
1977

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VT

A Report on Research on Competency Based Vocational Education in Kentucky

January, 1978

Research Coordinating Unit
Bureau of Vocational Education
Kentucky Department of Education

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I Introduction - The Reason for this Report

In the past few years, increasing scruitiny has been paid to the way public servants spend the tax dollars of citizens. Money spent for research in many government agencies has been a focal point of critical inquiries.

The Federal government which supports most of the research contracted by state and federal agencies has emphasized the need to develop methods and programs to assure that research results find their way into practice in the field in new federal legislation authorizing funds for vocational education research.

One of the chief reasons that research studies often end up sitting on what some have called "million-dollar shelves," rather than leading to the development of new programs and practices, is that the reports are not written in a form understandable to the lay public or, sometimes, practitioners in the field who do not have the benefit of research training.

The common reporting format of most research reports is not designed to confuse the uninitiated with jargon. Standards for reporting have been developed over many years in the research community to ensure two important principles — rigorous adherence to the scientific method and the ability of a second researcher to repeat the study and get the same results. These two elements together with the proper application of statistical tests can assure a degree of certainty that research results are valid.

As such research can provide an accurate way of finding out what programs and practices are effective in the field of vocational education and other service areas. The potential for research to aid in improving programs to bring about desired outcomes is vast and largely untapped.

For two reasons—to enhance utilization of research results and to provide the best information available to the public—it is necessary to communicate research findings in a form understandable to those outside the research community.

In order for research results to be utilized in developing new programs or modifying on-going ones, it is necessary to provide a link between the researcher and the teacher or administrator in the schools. It may not be overstating the case to say that these groups do not speak the same language. For the most part, vocational teachers and administrators do not have training in research nor should they, since their role is to provide instruction for students.

Because the American system of education is predicated on lay control of education through state and local boards of education, results of research studies must be made available to board members and elected officials to aid in decision-making.

The increasing use of advisory and craft committees particularly in vocational education is intended to provide a way for the program to be more responsive to the vocational education needs of communities. The people who have given too generously of their time to serve on these committees need to be able to examine research results in order to be adequately informed about vocational education.

The purpose of this report is to interpret the findings of two research studies on Competency-Based Vocational Education in a manner meaningful to teachers and the public. The first study reported here is "The Development of an Instrument to Measure Student Attitudes Toward Competency-Based Individualized Instructional Modules" by John C. Thomas, Curriculum Development Center, University of Kentucky. Supported with federal funds for vocational education research, the purpose of this study was two-fold:

- to develop a reliable questionnaire to measure student attitudes toward CBVE, and
- to determine if student attitudes toward the program, its materials and its organization identify needed revisions in the program or its parts.

"CBVE: A Study to Measure Its Effectiveness in Kentucky" the second study, by the Bureau of Vocational Education to the Center for Career and Vocational Teacher Education at Western Kentucky University. Paid for with state funds appropriated by the General Assembly in 1976 to implement CBVE in over 200 Kentucky classrooms, the study was designed to test the effectiveness of CBVE.

It is an attempt to provide answers to the following questions:

Do students learn more in CBVE instruction than in traditional instruction?

Are students better able to perform the entry-level job skills demanded by business and industry as a result of CBVE instruction than following traditional instruction?

Do students in CBVE learn faster than students in traditionally taught classrooms?

Are students in CBVE better motivated to perform in CBVE instruction than in a traditional sequence?

These questions reflect some of the outcomes expected from implementing the new system.

The Western study, conducted by Roger D. Vincent and Robert A. Cobb, also collected information about attitudes toward CBVE using a modification of Thomas' questionnaire. Attitudes of teachers and administrators were also measured.

This report interprets the findings of these studies in a way that, hopefully, will be understandable to vocational educators and the public. Statistical data and research methodology are presented and discussed so that the reader can determine the accuracy and scope of data and evidence used to formulate conclusions and recommendations.

For researchers who wish more detailed information, copies of the research reports are available from the Research Coordinating Unit, Bureau of Vocational Education, Frankfort, Kentucky 40601, the authors of the reports, or the ERIC information retrieval system.

This is the first attempt to synthesize and interpret research findings. The Research Coordinating Unit which has undertaken this activity would like to determine

how effective this type of interpretation report is. The unit has made a major commitment to facilitating the utilization of the results of research and development efforts in vocational education. Comments or suggestions from readers are welcome.

II History and Background of Competency-Based Vocational Education in Kentucky

The initial portions of this section of the report are taken from "The Master Plan for Competency Based Vocational Education in Kentucky" an August, 1975, unpublished document prepared by staff of the Bureau of Vocational Education to accompany the initial state funding request for the 1976-78 Biennium.

The sample module "Defining CBVE" was added in order to illustrate the module format. This module, although not intended for vocational education student use, follows exactly the format used in preparing modules for student use. The particular module presented as a part of this report was prepared as part of a 12 module series designed for teacher and administrator inservice.

The section of this Chapter, "Progress Since 1976" was added to update readers of this report.

Educators have stressed the importance of individual differences and amount of variation in individual growth, development, and learning capability. At the same time, educational programs have been designed to educate all students during the same period of time with varying levels of success being accepted. Competency-Based Vocational Education (CBVE) is an effort to build curricula which will capitalize on the individual nature of students. CBVE stresses the performance of students as the end results and recognizes that time and teaching techniques will vary if all students are to achieve a level of success.

1. Rationale

Vocational education in Kentucky for the past ten years can be characterized by expansion in the quantity of programs offered. This period has seen vocational education expand in number of vocational teachers, quality and number of vocational facilities, and student enrollment. Enrollment increased from slightly over 81,000 in 1964 to more than 194,000 in 1974. While the quality of programs has constantly improved, the rapid expansion has created a need to focus on improving the quality of vocational programs for the next ten years. Program improvement includes continued improvement in the quality of facilities and equipment, vocational teachers, and the curriculum. CBVE can provide a focus for curriculum improvement which may involve teacher preparation and facility design.

The 1974 Annual Report of the Kentucky Advisory Council for Vocational Education was developed around the theme of improving the quality of vocational education in Kentucky during the next ten years. This report was not intended to imply that existing programs are ineffective. Rather the report recognizes that vocational educators have the capability of improving programs for efficiency and particularly for providing a better educational service to the vocational education students. CBVE can improve the efficiency of programs and serve the students with a more consistent and effective education.

Accountability has received substantial attention as it relates to all educational programs and institutions. Evaluation techniques are being sought and/or developed to assist educational institutions to be more accountable.

Traditionally evaluation of education programs has taken the form of accreditation which is based heavily on the educational "process" Real accountability lies in determining the quality and quantity of desirable change which occurs to students enrolled in programs. This change becomes the "product" of education and is far more indicative of the quality of the educational program. CBVE provides a structure which assess the relevance of the educational program to the objectives of the student, school, and community. It also assesses the level of competence achieved by the vocational student and therefore provides an excellent measure of the "product" of the vocational program.

2. History of CBVE in Kentucky

Good vocational teachers with a desire to base their instruction on competencies needed by workers and the ability to individualize instruction have been accomplishing a form of CBVE for years. There are some outstanding individual examples in the vocational schools and high schools throughout the state, but they were limited to individual efforts. These programs have not made a major impact on the implementation of CBVE in Kentucky.

Within the past four years, some vocational regions and vocational schools have attempted with varying degrees of success to implement CBVE on a broader scale. These early efforts pointed to a need for a statewide effort to conceptualize, finance, and implement CBVE throughout all vocational programs in all vocational schools and high schools in Kentucky.

The Bureau of Vocational Education was a charter member of the Vocational-Technical Consortium of States (V-TECS) which started with seven states throughout the southeastern United States. V-TECS has now grown to eleven states who are cooperating in producing catalogs of performance objectives. Kentucky has provided the chairman of the Board of Directors of this consortium for the past three years including 1975-76.

In 1974-75, it was recognized that the catalogs produced by V-TECS were not the final step. It was determined that teachers would need some curriculum materials developed. The first step involved a review of the literature regarding CBVE programs. A small team of Bureau members visited recommended programs in Kentucky, Alabama, Georgia, and North Carolina to identify the components of the curriculum materials to be produced.

A CBVE Task Force appointed in the Bureau evaluated the material gathered and observed and developed a model delivery system for CBVE. This model was described to more than 400 vocational teachers, administrators, and teacher educators during November, 1974. The model was revised and during the summer of 1975 a selected group of teachers assisted the Bureau staff to write student modules for ten occupational programs. These materials were produced by the Curriculum Development Center at the University of Kentucky. The modules were being field-tested during the 1975-76 school year. These ten areas were revised and all but one was ready for demonstration sites and full implementation during the 1976-77 school year.

The Bureau of Vocational Education has devoted much effort to planning and implementing CBVE. The 1975 Vocational Education Conference had as its theme "Competency Based Vocational Education." CBVE is still being received enthusiastically by teachers and administrators in Kentucky. With adequate priority for resources, CBVE can make a major improvement in the quality of the vocational education programs.

3. Description of Competency Based Vocational Education

No attempt will be made to completely describe all of the concepts included in CBVE. This section will simply contain a brief description of the Kentucky model for providing CBVE as it is currently being developed. A competency based vocational education curriculum provides teaching-learning activities for each individual to bring about changes in knowledge, skills, and attitudes. The individual's progress can be measured in terms of his performance.

The Kentucky CBVE program is based on catalogs of performance objectives and criterion-referenced measures produced by the Vocational-Technical Education Consortium of States (V-TECS). Kentucky, as a member of the consortium, must produce its share of the catalogs, but the consortium will provide copies of catalogs produced by other states. These catalogs will be produced only after extensive surveys of incumbent workers to determine what tasks they actually perform. The performance objectives are written by a writing team and then validated by workers and their supervisors, teachers, teacher educators, and curriculum writers. Annually, V-TECS should produce catalogs for approximately 20-30 occupational programs.

The Kentucky Model refers to the particular delivery system which has been developed to provide the individualized CBVE program. This model is based on the development of student modules which are used to provide individualized learning activities which are designed to help the student achieve the objectives as stated in the V-TECS catalogs. The unique pocket folder design of the module permits maximum flexibility and is adaptable to a variety of different programs. The student modules will be developed for each vocational education program. The modules will be developed by teacher-writers, field-tested in a limited number of schools, revised by the curriculum writers, and produced in quantity for use by vocational teachers. A sample module follows.

Inservice Education

DEFINING CBVE

Introduction

In order to successfully implement an instructional method, you must first understand methods that are available and how they will aid the teaching-learning process. One method currently being used in Kentucky schools is competency-based vocational education (CBVE). In this module you will learn what CBVE is, the characteristics of a CBVE program, and how CBVE can improve vocational education in Kentucky.

Directions

Read the objectives below. If you think that you are already able to perform these tasks, read the check-out activities on the back cover. Then, either arrange with your instructor about doing the Check-Out Activities,

or

If you need to complete learning activities in order to be able to do the tasks, find the Learning Activities inside this module and go through them in the order in which they are listed.

Objective

(1) Given three definitions, identify the most appropriate definition of CBVE as used in Kentucky Vocational Education.

(2) Given a list of fifteen items, check (✓) the seven statements which most nearly describe the characteristics of a CBVE program as it is being implemented in Kentucky.

(3) List three ways in which CBVE can help improve vocational education in Kentucky.

Learning Activities

1 → READ Fardig, "Development of the Kentucky Model for Modularized CBVE," pp. 1-6, or READ Fardig, "Handbook for the Development of Vocational Education Modules," pp. 1-7.

(or)_____

2 ✓ TEST YOUR KNOWLEDGE of CBVE by completing Student Self-Check I, WHAT IS CBVE?

3 → VIEW the slide-tape presentation IE-1, "Characteristics of CBVE Programs."

(or)_____

4 ✓ TEST YOUR KNOWLEDGE of the characteristics of CBVE programs by completing Student Self-Check II, CHARACTERISTICS OF CBVE.

5 → READ Instruction Sheet I, HOW CBVE CAN IMPROVE VOCATIONAL EDUCATION.

(or)_____

6 ✓ TEST YOUR KNOWLEDGE of how CBVE may improve vocational education by completing Student Self-Check III, CBVE HELPS IMPROVE VOCATIONAL EDUCATION.

7 ✓ ARRANGE with your instructor to complete this module by going through the Check-Out Activities listed on the back cover.

Student Self-Check I

WHAT IS CBVE?

Put an X in the box before the statements that describe CBVE. After you have finished compare your answers with those at the bottom of the page. If they do not agree, go through Learning Activities 1 and 2 again.

- ☐ 1. CBVE is an instructional system.
- ☐ 2. CBVE is a program in which performance objectives are specified in rigorous detail.
- ☐ 3. CBVE provides group instruction primarily based on lecture, demonstration, and group activities.
- ☐ 4. CBVE is a program in which the performance objectives are made known to the student in advance of instruction.
- ☐ 5. CBVE holds the student accountable for attaining a given level of competency in performing the essential tasks of an occupation.
- ☐ 6. CBVE emphasizes the affective (attitude) and cognitive (knowledge) learning associated with occupational education.
- ☐ 7. CBVE holds the student accountable for achieving passing grades only.
- ☐ 8. CBVE is a system which recognizes that learning occurs over a specific period of time for most students.
- ☐ 9. CBVE is a system which insures that most students will be employable at the end of the same specified time period.
- ☐ 10. CBVE is a program in which performance objectives are agreed to by student and instructor in advance of instruction.

Answers: "X's" belong before statements 1, 2, 4, 5, 10.

Student Self-Check II

CHARACTERISTICS OF CBVE

Complete each of the statements below. After you have finished compare your answers with the ones at the bottom of the page. If they do not agree, go through Learning Activity 3 again.

1. _____ objectives are measurable.
2. Objectives are based on actual _____ _____.
3. _____ is based on demonstrated competency.
4. _____ is individualized.
5. _____ is a variable.
6. Immediate _____ is given to the learning activities.
7. Emphasis is on _____, not _____, requirements.
8. _____ is modularized.
9. The student is accountable for _____.

Answers: 1. Performance; 2. worker tasks; 3. Achievement; 4. Instruction; 5. Time; 6. feedback; 7. exit, entrance; 8. Instruction; 9. performance

Instruction Sheet I

HOW CBVE CAN IMPROVE VOCATIONAL EDUCATION

The Kentucky Bureau of Vocational Education has made a serious commitment to CBVE. State leaders in vocational education believe that CBVE is a powerful instructional approach which holds great promise for increasing student learning and occupational success and for improving vocational programs in Kentucky.

CBVE can improve vocational education in the following ways:

1. Because instruction is individualized, the student may achieve a level of occupational competence at his own rate.

2. Use of a modular instructional approach allows both students and teachers a greater degree of freedom and flexibility. The teacher becomes a manager of the learning situation.

3. Because the performance objectives of a CBVE program are very specific, the student knows in advance of instruction exactly what level of performance he must achieve.

4. Students may remain more highly motivated in a CBVE program because of the use of modules and multimedia materials, as opposed to traditional textbooks.

5. Vocational programs may operate on an open entry/open exit basis since each student is moving at his own pace.

6. Programs may be individually designed to serve student differences in learning styles, interests, and abilities.

7. Programs will be more accountable to the taxpayers, the students, and the future employers because they can evaluate the measurable objectives of the program.

8. It may be that a school does not offer the particular program a student wishes to complete; but by combining modules from several programs, the student may create his own course of study leading to the occupation in which he is interested.

Student Self-Check III

CBVE HELPS IMPROVE VOCATIONAL EDUCATION

Below are problems encountered in many vocational programs. Beside each problem, write how CBVE could improve the situation. After you have finished, check your answers with those on the following page. If they do not agree, refer to Instruction Sheet I.

Problem	CBVE Solution
1. The bright student becomes bored because he is kept in a group situation and cannot move ahead.	
2. The instructor and students become "locked in" a learning situation.	
3. The student has to guess how well he must perform in order to make a passing grade.	
4. The student becomes tired of simply reading in a textbook.	
5. The student must stay in the class the entire school year, even though he could finish the requirements in seven months.	
6. All students in the class receive exactly the same instructions.	
7. The program is not accountable to anyone - - , students, employees, or general public.	
8. A student is interested in an occupation not offered by his school.	

Student Self-Check III (p. 2)

Answers:

1. The student may progress at his own rate.
2. A modular instructional approach allows for a greater degree of freedom and flexibility.
3. The student knows in advance what level of performance he must achieve.
4. Students use a variety of instructional materials.
5. The program may operate on an open entry/open exit basis.
6. The program may be individually designed.
7. The program is more accountable because students, employees, and the general public may evaluate the objectives.
8. A student may combine modules from several programs and create a new program.

Instructor's Final Checklist

DEFINING CBVE

Check the student's performance in the following elements of defining CBVE.

Place an X in the appropriate box indicating not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, the item was impossible to complete, place an X in the "Not Applicable" box.

Performance Level: All items must receive a rating of FULLY ACCOMPLISHED (or Not Applicable). If any items are rated Not Accomplished, or Partially Accomplished, the student and instructor will discuss this and decide which learning activities must be repeated.

	Student Performance			
	Not Applicable	Not Accomplished	Partially Accomplished	Fully Accomplished
1. The student identified most appropriate definition	[ ]	[ ]	[ ]	[ ]
2. The student checked seven statements to describe CBVE.	[ ]	[ ]	[ ]	[ ]
3. The student listed three ways CBVE can improve vocational education	[ ]	[ ]	[ ]	[ ]

Check-Out Activities

The statements below explain the activities you must be able to complete in order to finish this module. After you complete the activities your instructor will rate your performance using the Instructor's Final Checklist, DEFINING CBVE.

✓ Your instructor will provide three definitions of CBVE. Read each definition and place a check (✓) beside the most appropriate definition.

✓ Your instructor will provide a list of fifteen items. Check the seven items which most nearly describe the characteristics of the CBVE Program as it is being implemented in Kentucky.

✓ List three ways CBVE can improve vocational education in Kentucky.

A COOPERATIVE EFFORT BETWEEN THE BUREAU OF VOCATIONAL EDUCATION, STATE DEPARTMENT OF EDUCATION AND THE DEPARTMENT OF VOCATIONAL EDUCATION, COLLEGE OF EDUCATION, UNIVERSITY OF KENTUCKY

Check-Out Activity I

DEFINITION OF COMPETENCY-BASED VOCATIONAL EDUCATION (CBVE)

Below are listed three definitions. Check (✓) the definition which is most appropriate for competency-based vocational education (CBVE) based upon your reading.

_____ 1. CBVE is a system of vocational education which recognizes that learning occurs over a specific period of time for most students and provides group instruction primarily based on lecture, demonstration, and group practice of activities designed to insure that most students will be employable after the specified time period.

_____ 2. CBVE is a program which emphasizes the affective (attitude) and cognitive (knowledge) learning associated with occupational education since in most occupations a student who has a good attitude and knows how a task is to be done can perform satisfactorily on the job.

_____ 3. CBVE is a program in which performance objectives are specified and agreed to, in rigorous detail, in advance of instruction. The student is held accountable, not for achieving passing grades, but for attaining a given level of competency in performing the essential tasks of the occupation.

Check-Out Activity II

CHARACTERISTICS OF A CBVE PROGRAM

Below are listed fifteen characteristics of a CBVE program. Check (✓) the seven which most nearly describe the characteristics of a CBVE program.

_____ 1. Instruction is individualized.

_____ 2. The program is designed to answer group needs.

_____ 3. The program is content-based.

_____ 4. Evaluation is based upon subjective criteria.

_____ 5. The student is evaluated on demonstrated performance.

_____ 6. Time is a variable.

_____ 7. The teacher directs students as a group.

_____ 8. Emphasis is on exit, not entrance, requirements.

_____ 9. The program is time-based.

_____ 10. The main part of instruction is provided by lecture.

_____ 11. Instruction is modularized.

_____ 12. The program is based on performance objectives developed from worker tasks.

_____ 13. The program emphasizes delayed feedback.

_____ 14. Instruction is classroom-based.

_____ 15. The student is held accountable for developing competencies.

Check-Out Activity III

List three ways in which CBVE can help improve vocational education in Kentucky.

1. _____

2. _____

3. _____

4. Goals of CBVE in Kentucky

1. The principles and practices of competency based education will be the basis for vocational education programs in Kentucky.

2. Vocational education curriculum will be developed by utilizing systematic research-oriented task analyses and validated performance objectives.

3. Teacher education, both pre-service and in-service, will provide vocational educational professional personnel with competencies needed to implement competency based programs.

4. Instruction in vocational education will be individualized to focus on the learner's needs and goals.

5. Vocational education programs will be managed to provide for student participation on an open-entry/open-exit basis.

6. Vocational instructional facilities and equipment needs will be determined by the requirements of competency based instruction.

7. Major emphasis in the allocation of resources will be placed on the improvement of vocational education instruction.

8. The certification of vocational education personnel will be on the basis of demonstrated professional and technical competencies.

9. Student evaluation will be based on demonstrated competencies.

10. Vocational education teachers will be involved in the development of competency based education; in writing instructional materials for statewide distribution, in field testing and demonstrating competency based education programs, and in enriching and revising competency based education materials for implementation in specific programs.

11. The competency based vocational education program in Kentucky will be evaluated on a continuous and systematic basis.

5. Objectives of CBVE for the 1976-78 Biennium

1. By June 30, 1978, implement 1,179 competency based vocational education programs to serve 38,430 students.

2. By June 30, 1978, develop, in conjunction with the Vocational-Technical Education Consortium of States, 83 occupational task inventories.

3. By June 30, 1978, develop, in conjunction with the Vocational-Technical Education Consortium of States, catalogs of performance objectives and criterion-referenced measures in 83 occupational areas.

4. By June 30, 1978, develop competency based learning packages in 28 occupational areas.

5. By June 30, 1978, field test the competency based learning packages in two programs per occupational areas (a total of 56 programs).

6. By June 30, 1978, provide in-service education in the areas of competency based vocational education for 1,000 vocational education teachers, 300 vocational education administrators, 100 vocational teacher educators, and 200 general school administrators.

7. Provide a minimum of two study carrels, one file cabinet, and two slide/tape projectors in each program implementing competency based vocational education.

8. By June 30, 1978, conduct a research based study to determine the cost effectiveness of competency based vocational education in Kentucky.

9. By June 30, 1978, plan, conduct, and evaluate ten sites for demonstrating the use of competency based vocational education programs.

10. By June 30, 1978, decrease by five percent per learner the instructional cost of vocational education.

11. By June 30, 1978, increase vocational facility utilization by ten percent.

12. The efficiency and effectiveness with which learners acquire the characteristics commensurate with their career goals and the needs of employers will increase by 20 percent.

6. Progress Since 1976

The 1976 Kentucky General Assembly approved $1.2 million for the implementation of CBVE during the 1976-78 biennium. This was approximately half the amount requested. Program objectives were adjusted accordingly.

Modules for nine occupational areas had been developed, field tested and revised mainly using federal funds for curriculum development and research and development prior to the beginning of the biennium. These were: auto body repair, bank teller, cashier-checker, carpentry, child care, food preparation, machine shop, secretarial and tractor mechanics. (Dental assistant had been developed, but field test results indicated that the program required extensive revision. This was, therefore, not available for implementation.)

When school opened in the fall of 1976, 200 teachers across the Commonwealth were using CBVE in their classrooms.

During the 1976-77 school year modules for home furnishings, floral design and legal secretarial were field tested and revised. New CBVE programs in these areas and additional teachers using the modules for the nine occupational areas produced the year previously were added in the fall of 1977, bringing the total number of CBVE programs implemented to over 450.

During 1976-77 five new occupational programs were developed, gardening and groundskeeping, alterationist, court reporter, auto mechanics, and air conditioning and refrigeration repair. These modules are being field tested in Kentucky schools at the time of this writing. They are scheduled to be revised during the spring and summer of 1978 and implemented in the fall of 1978. The projected number of programs implementing CBVE in the fall of 1978 is approximately 700.

III Interpretation of Research Findings

1. Attitudes on CBVE

This report is an attempt to report, interpret and synthesize the results of two research studies on CBVE.

John C. Thomas, Industrial Education Curriculum Specialist, Curriculum Development Center, University of Kentucky undertook "The Development of an Instrument to Measure Student Attitudes Toward Competency Based Individualized Instructional Modules."

Thomas validated a 38 question survey to be used to measure students' attitudes toward CBVE. This is a major contribution to the research effort on CBVE, as this scale can be used in future studies with the confidence that it is in fact, providing a meaningful measure of attitudes toward CBVE (in research parlance--validity) and, also, that attitudes measured with this survey can be compared with attitudes of students at different times and in different places using the same survey (reliability).

The results of Thomas' research show that most students have a positive attitude toward CBVE.

When attitude scores were compared according to the occupational group of the students, it was found that there were statistically significant differences between some groups.

The particular statistical test used in this instance tells the researcher which groups cluster together and which are different from all the others.

This test allows us to say that attitude scores for bank teller and secretary and tractor mechanics students were the highest; students in food preparation and cashier-checker were significantly lower than the first group and significantly higher than the last group. Child care worker, auto body repair, carpentry and machine shop students were the least favorable.

Although the statistical evidence is not altogether clear, it appears that attitudinal differences are not due to any difference in the quality of the modules or other aspects of the program, in the different programs but, rather, the difference is due to actual differences among the students enrolled in the various programs. For the most part students who scored high in attitude, also scored significantly higher than their peers on subsets of the attitude survey designed to measure student interest, readability, solving problems and the student self-check.

This last point cannot be said to be a conclusion of Thomas' study as the statistical evidence suggests only a trend in this direction. This explanation is speculative and should be tested by further research research before recommendations, program revisions or changes are based on this line of reasoning.

The study did find the aforementioned statistical difference between students enrolled in different occupational areas for attitudes toward student interest, readability, solving problems and the student self-check. These are discussed further in Section VI, "About the Module."

Two other findings of Thomas' study suggest the success of the CBVE program. His data show that the number of modules completed was not a significant factor in the formation of attitudes toward CBVE. The data also failed to show a significant correlation between students' grade point averages and their attitudes toward CBVE. This counters the argument that CBVE works only for faster, smarter students. CBVE is positively regarded by all students exposed to the system, regardless of their innate abilities or previous success in school.

Statistical procedures used to determine this interpretation of the research results can be found in Section IV, "Analysis Data on Attitudes Toward CBVE."

In a second study using a modified version of Thomas' attitude survey on CBVE to measure students attitudes toward CBVE, the researchers at Western Kentucky University also found strongly positive attitudes toward CBVE among students.

This study also measured teacher and administrator attitudes toward CBVE using different attitude surveys they developed. Responses from both groups showed positive attitudes, with administrators most favorable in their responses, followed by teachers, and then students.

Statistical procedures used to determine this interpretation of the research results can be found in Section IV, "Analysis of Data on Attitudes Toward CBVE."

2. Effectiveness of CBVE

"CBVE: A Study to Measure Its Effectiveness in Kentucky" was performed by Roger D. Vincent and Robert A. Cobb of the Center for Career and Vocational Teacher Education at Western Kentucky University, under contract with the Competency Based Vocational Education Unit of the Bureau of Vocational Education.

This project included an experimental component designed to compare student learning with CBVE instruction and student learning with traditional instruction.

To save overwhelming expense the researchers selected three occupational areas to study. They were bank teller, secretary and tractor mechanics. Four classes in each area represented the subjects for the study. Since proper statistical controls were used, there is no reason to doubt the

generalizability of these findings to CBVE programs in other locations or in other occupational areas.

The study measured:

- cognitive skills for the subject matter studied
- performance skills for the subject matter studied
- time taken to complete the subject matter
- the student's effort and attitude and grade for the subject matter studied.

If CBVE students scored higher on the cognitive skills test than traditionally taught students, it would be safe to say that students in CBVE programs actually learn more than their counterparts in traditionally taught programs.

If CBVE students scored higher on performance skills than students in traditionally taught programs, it would be reasonable to conclude that CBVE instruction better prepares students to actually perform entry-level skills demanded by employers than does a traditional vocational education sequence.

If CBVE students take less time to cover the same subject matter as do students in traditional programs, it would be safe to say that CBVE allows students to learn faster than other instructional methods.

If students in CBVE programs showed more effort, more favorable attitudes and received higher grades than their counterparts, it would be safe to conclude that CBVE does motivate students to higher levels of performance.

The data from this study shows that in three out of six experimental situations CBVE students did score significantly higher than traditionally taught students on tests designed to measure cognitive skills learning. In two of the remaining classroom situations CBVE students did actually score higher than other students, but not to a statistically higher degree.

For the remaining group, which was secretarial students, the cognitive skills test showed that the traditionally taught students learned more than those in CBVE instructed classes. Although the difference does not show a statistically significant difference, it deserves inspection because it is a difference in the opposite direction from the others. It appears that the reason for this is that students in the traditional class spent almost twice as much time studying the same subject matter as did the students in the CBVE program. It is reasonable to conclude that this accounts for this unusual finding, which should be considered invalid because the experimental situation was not maintained the same for all students enabling researchers to make valid comparisons.

Disregarding then, one secretarial group which has been shown to be invalid for comparison with the other groups, it is reasonable to conclude that CBVE students do learn more than students in traditionally taught programs.

The performance skills scores for three of six CBVE groups were significantly higher than those of traditionally taught students.

In both the bank teller and secretarial areas, one CBVE group in each scored significantly higher on the performance skills test than traditionally taught students did. The other comparison within both of these areas showed no significant differences between CBVE and traditional groups, actual differences were so slight that no trend is indicated and further speculation meaningless.

For tractor mechanics one CBVE group showed significantly higher performance scores than the traditionally taught group. In the other test situation no significant difference between traditional and CBVE students is shown, but there is clearly a trend in the opposite direction from the previously reported data on performance. In other words, in one experimental group the traditional students outperformed the CBVE students. Clearly this is due to the fact that the traditional group in question had significantly higher cognitive skills test scores in the pretest than the other group. In other words, that group knew more before they studied the subject matter resulting in higher levels of performance on manipulative skills.

On the subject of performance, then it seems reasonable to conclude that students in CBVE programs are better able to perform entry-level skills demanded by employers than are students in traditional programs.

The next question under examination is whether students in CBVE programs do actually learn faster than students in traditionally taught programs. In four out of six comparisons data supported the conclusion that CBVE does allow students to learn faster. In one group of secretarial students there was no significant difference between the CBVE and the traditional groups, nor was a trend evidenced. In the final group of bank teller students there was a significant difference between the two groups, but in the opposite direction. The traditionally taught group took a significantly shorter length of time (almost half) to complete the subject matter than the CBVE group. It would appear that instruction was not similiar in both groups. While the traditional group completed the assignment in a significantly shorter length of time, the CBVE group showed significantly higher scores than the traditional group in both cognitive and performance skills. It appears the traditional group in this comparison was simply not as thorough, possibly skipping or omitting some material enabling them to finish the subject matter in a shorter length of time.

If students in CBVE programs showed more effort, more favorable attitude and received higher grades than students in traditional programs, it would be reasonable to conclude that the self-paced nature of CBVE does motivate students to higher levels of performance.

In only one out of six cases was effort, as rated by the teacher, significantly higher for students in CBVE programs than for students in traditional programs, no significant differences for attitudes were found between groups. Strong trends are not evident in this data. Clearly the conclusion that CBVE is inherently motivating for students is not warranted, based on this data.

3. Implications for Future Research on CBVE

Overall, it seems reasonable to conclude that CBVE enables students to learn more, to learn faster and to better perform entry-level skills demanded by employers. Although interpretation of results in this report is consistent

with standards of explanation accepted in the research community, it cannot be argued that these research results on effectiveness are either strong or straightforward.

When researchers say that results are significant at the .05 (PL.05) level, they are saying that 95 times out of 100 the results are, in fact, different. The independent variable does in fact have an effect on the dependent variable. In properly designed and conducted research the chances are only 5 out of 100 that the results are not different. (For .01 the chances that the research results are wrong are 1 in 100, for PL.001, the chances are 1 in 1,000.)

Sometimes results do not show up significantly different in statistical tests when they really are different. There is no simple way of determining the chances of this kind of error, it depends on many factors, the statistical test, the method of measurement, the number of subjects studied, and the level of significance (the opposite of above the higher level (.05+) the less chance of this kind of error).

For this reason researchers often discuss "trends" that data show. These are numerical differences in data that are not significant, i.e., we cannot say that 5 times out of 100 we are sure there is really a difference.

Further research on the same question is the only reliable way of determining if differences are real or not.

This particular study on the effectiveness of CBVE has several design aspects that make it likely that results are hiding real differences between CBVE and traditional instruction.

1. The study relies on measurement of learning for three to four modules, over from 1.2 to 3.6 class periods. Because it was designed as a sequential instructional system for a full program of study, the effects of CBVE are likely to be long-term rather than short-term in nature. A study using more modules and a longer period of time as the experimental situation would maximize potential differences and clarify some of the inconsistencies found in these data.

2. The differences found that are significant or show a trend in the wrong direction are disturbing, but in all three cases they can be interpreted as spurious because of systematic differences in the groups compared or probable inconsistency in instruction. More control of the experimental situation in future studies would help alleviate similiar problems.

3. The original research design was a classic one in which subjects (students) are given both pre-tests and post-tests on the dependent variables being measured (cognitive and performance skills) this allows researchers to make sure that differences they find are not due to pre-existing differences in the subjects rather than what they are trying to test, in this case, CBVE.

In this case a more complex design was extended from the first version. There were four classes chosen from each of the three occupational areas. Two of the teachers were asked to teach CBVE instruction first

and traditional methods second. The other two were asked to reverse the order and teach traditionally for the first instructional period and teach using the CBVE method during the second instructional period.

This is an exceptionally strong research design requiring rigorous experimental control and exacting measurement.

In the educational setting it is unlikely that either would be available, making interpretation of results difficult. It is recommended that future researchers return to the simple, classic pre-post design, more elegant for this kind of research. The more complex design could be hiding actual differences due to CBVE.

4. The study on effectiveness administered instructional period one and instructional period two back-to-back. If repeated measures are used in future studies there should be an interval of from two to four weeks between administrations. Otherwise, there may be confounding effects in the data as a result of the previous instructional method. Further, the proper statistical tests for repeated measures should be used and reported in future studies.

IV Analysis of Data on Attitudes Toward CBVE

1. The Thomas Study

The study, "The Development of an Instrument to Measure Student Attitudes Toward Competency Based Individualized Instructional Modules" by John Thomas used the following methods and procedures to construct the initial instrument.

The initial development of the Likert-type scale consisted of listing 84 statements which related to the objectives of this study. This list was next submitted to a jury of experts for review. This jury of experts consisted of eight people chosen from a total of 26 who participated in the Workshop for Implementing Competency Based Vocational Education which was held at the University of Kentucky in February of 1976.

The jury of experts was composed of both men and women and included teacher educators, regional program coordinators, regional industrial coordinators, the assistant director for curriculum development and a supervisor from the Bureau of Vocational Education.

Jury members were asked to select items, to indicate if each item was worded correctly and to indicate if the assigned valence was correct.

The final 38 items were randomly ordered and placed on the instrument with a summated (Likert-type) five point scale ranging from agree very much to disagree very much for re-examination by the jury of experts.

A coding sheet was developed for use with each set of instruments in order to obtain grade point averages and other information to be provided by the teacher.

The wording was changed in three of the 38 items as a result of a final examination by the jury of experts.

A total of 182 students in 18 schools participated in the trial study for the development of attitude inventory instrument during the 1975-76 school year. The trial study was conducted to determine the validity and reliability of the instrument, to obtain student reactions to the directions contained within the instrument and to determine if the statistical model provided the data necessary to meet the requirements of the study.

The population for the trial study included all the schools where modules of instruction were being field tested. The schools, programs, and students involved with the trial study are shown in Table 1.

Table 1

POPULATION FOR TRIAL STUDY

School	Program	Students
Harrison County Vocational	Bank Teller	--*
Boyd County High School	Bank Teller	11
Campbell County High School	Secretarial	--*
Moore High School	Secretarial	--*
Northern Kentucky Voc.-Tech. School	Machinist	15
Owensboro Vocational School	Machinist	10
Franklin County Vocational School	Cashier Checker	6
Murray Vocational School	Cashier Checker	15
Ashland Community College	Dental Assistant	10
Paducah Vocational School	Carpentry	14
Harrison County Vocational School	Carpentry	11
Todd Central High School	Food Preparation	19
Barren County High School	Food Preparation	11
Atherton High School	Child Care	17
McLean County High School	Child Care	9
Central Kentucky Voc.-Tech. School	Auto Body	12
Paducah Vocational School	Auto Body	5
Barren County High School	Tractor Mechanic	14
Clark County High School	Tractor Mechanic	9
*Returns not received	Total	188

The 16 schools which returned usable data represented 84 percent of the total number of schools who field tested modules during the 1975-76 school year.

A personal visit by the investigator to each field test site allowed for the clarification of the procedures for administering the instruments to the students and for describing the purpose of the study.

The instrument and coding sheet was explained in detail to each teacher. The area of student privacy as it relates to collecting data was discussed and it was explained that no student name should appear on any of the instruments.

The instrument was administered late in the school year and some students had actually completed the school year before the administration of the instrument. The sample size was somewhat smaller, approximately 28 percent, than the total population for the trial study because of the student attrition rate during the year and the timing of the trial study.

The total population for the trial study was much smaller than the total population for the final study. Each year a larger number of students have access to competency based individualized instructional modules in Kentucky.

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data collected in the trial study.

The reliability of the attitude scale has been appraised: (1) by computing internal consistency estimates and (2) by determining test-retest stability coefficients.

To obtain internal consistency estimates, item analysis computations were generated as a result of a trial study conducted with 188 students during 1976 which produced the means, the standard deviations, and correlation coefficients for each item as shown in Table 2.

In order to ascertain instrument homogeneity, the student score on each item was correlated with the total scale score, a standard statistical test. It was hypothesized that items having low positive or any negative correlation with the total scores were not contributing to scale homogeneity or unidemesionality. The 38 item instrument is presented in Appendix A.

To obtain stability coefficients, a test-retest procedure was used with one program randomly selected from the population.

The interest in retesting the scale is to determine whether developmental changes have taken place in the same attitudes from one point in time to another.

The period of elapsed time between the first and second administrations of the instrument was two weeks. It was suggested by one highly respected research source that the elapsed time between such administrations be at least several days but not longer than two or three weeks. Another equally reliable source suggested that the elapsed time between administrations be at least two weeks. This allows enough time for the persons to forget their responses on the first administration but not enough time for them to change considerably on the trait being measured.

There were 22 students in the reliability sample. These students were all members of the population as previously defined. They represented a heterogeneous sample of the respondents selected at the time of the first instrument administration. The instruments for the reliability group were identical to those instruments used in other parts of the study, except for an identifying letter.

The test-retest process produced a correlation between forms of .559. The Guttman Split-Half reliability coeffiecient was .717 and Cronbach's Alpha for part 1 was .885 and for part 2 it was .871. All within acceptable limits for instruments reliability.

Validity is concerned with (1) what the scale measures and (2) how well it measures. Content validity is evaluated by determining the degree to which the items of the scale sample the content of the attitude domain. The scale must represent a well-defined universe of attitudes and behaviors in order to have content validity. Evaluation of the validity of the scale is made in terms of the adequacy of sampling.

Table 2

ITEM ANALYSIS OF ATTITUDE SCALE

ITEM	MEAN	STANDARD DEVIATION	CORRELATION COEFFICIENCY
1	3.48	1.36	.31
2	4.16	1.09	.44
3	2.94	1.38	.51
4	3.75	1.38	.42
5	2.87	1.47	.65
6	3.49	1.39	.53
7	3.68	1.33	.42
8	3.58	1.32	.35
9	3.94	1.29	.34
10	2.95	1.34	.22
11	3.14	1.40	.57
12	3.98	1.34	.27
13	2.42	1.48	.46
14	3.28	1.41	.39
15	3.45	1.29	.55
16	3.20	1.34	.50
17	3.64	1.38	.55
18	3.30	1.39	.57
19	3.45	1.51	.51
20	3.24	1.36	.44
21	3.65	1.36	.67
22	3.19	1.45	.57
23	3.56	1.36	.75
24	3.95	1.24	.50
25	3.08	1.45	.40
26	3.11	1.33	.34
27	2.53	1.40	.50
28	3.17	1.32	.55
29	3.97	1.14	.41
30	2.88	1.48	.65
31	3.70	1.26	.32
32	3.63	1.25	.35
33	3.91	1.21	.50
34	4.14	1.04	.42
35	3.02	1.52	.56
36	3.12	1.49	.36
37	3.48	1.29	.29
38	3.06	1.52	.52

At the time of the study the total number of programs using modules totaled 200. Among these 200 programs were nine different occupational areas. The number of schools that implemented modules of instruction ranged from 13 to 39. The breakdown is shown in Table 3.

Table 3

SCHOOLS PER PROGRAM AREA

Program	Number of Schools	Percentage of Total
Child Care	24	12
Food Preparation	29	14
Bank Teller	13	6
Secretary	13	6
Tractor Mechanics	18	10
Cashier Checker	20	10
Machine Shop	23	12
Auto Body	21	10
Carpentry	39	20
Totals	200	100

The number of students from programs drawn at random varied from 41 to 172. The breakdown of students in the nine different occupational areas is shown in Table 4.

Table 4

STUDENTS PER PROGRAM AREA

Program	Number of Students	Percentage of Total
Child Care	71	8.2
Food Preparation	84	7.8
Bank Teller	41	4.8
Secretary	104	12.1
Tractor Mechanics	70	8.1
Cashier Checker	144	16.8
Machine Shop	90	10.6
Auto Body	99	11.6
Carpentry	172	20.0
Totals	857	100.0

A list of teachers who were using instructional modules in their vocational education programs was acquired from the Competency Based Vocational Education Unit of the Bureau of Vocational Education located in Frankfort, Kentucky. A total of 210 programs constituted the population for this study. A cluster random sample was chosen as a method of selecting a sample.

The data needed to conduct this study was collected on one instrument completed by each student and a coding sheet completed by each teacher involved in the study.

An attempt was made to minimize the threats to the validity of the findings by: (1) obtaining a high rate of returns from the selected random sample of programs, (2) selecting a large sample from the population for this study and (3) conducting an eight month trial study prior to this study.

Follow-up telephone calls were made to teachers in order to obtain a high percentage of returns. Pre-stamped mailers were utilized in obtaining returns.

Forty-six or 97.8 percent of the programs returned the instruments. Three code sheets had to be completed by teachers a second time because they contained errors.

The student attitude mean scores for the nine occupations within this study are shown in Table 5.

The mean score range was 54-183. One hundred seventeen represents a score which reflects a neutral opinion concerning modules. A score falling below 117 is considered to be critical of modules, while a score above 117 indicates a favorable attitude toward modules. The best estimate for the mean score was 136.18 with a standard error of 0.94. The standard error of estimate (0.94) could be used to set limits around attitude score estimates.

The analysis for occupational sub-sets of groups, no pair of which have means that differ more than the shortest significant range for a sub-set of that size was accomplished by using the Duncan procedure in the Statistical Package for the Social Sciences. The sub-set groups differ in the following ways: machine shop and carpentry differ from tractor mechanics, secretary and bank teller; cashier checker and auto body differ from secretary and bank teller; child care worker, food preparation and tractor mechanics differ from bank teller.

Table 5

MEAN ATTITUDE SCORES BY OCCUPATIONAL AREAS

Occupational Area	Mean Attitude Score	Standard Error	N
Bank Teller	153.53	3.80	41
Secretary	143.19	2.48	104
Tractor Mechanics	140.49	2.96	70
Food Preparation	137.50	2.58	84
Child Care Worker	137.09	3.46	71
Auto Body	134.71	2.26	99
Cashier Checker	133.99	2.21	144
Machine Shop	128.78	2.35	90
Carpentry	131.83	2.65	172
Totals	136.19	0.94	857

Each student was also asked to indicate how they perceived themselves in terms of being successful within the class.

The following statement was arranged on a successful to unsuccessful four point scale as shown:

I have been:	[ ] Highly successful in this class
	[ ] Moderately successful in this class
	[ ] Somewhat unsuccessful in this class
	[ ] Unsuccessful in this class

Teachers were asked to rate each student in terms of the above criteria. The correlation between the student's rating of success and the teacher's rating of each student in terms of success was only .23.

The correlation between the students rating of themselves in terms of success and their grade point average was .34. The correlation between the teachers rating of each student in terms of success and the student grade point average was .58.

Each student was asked to indicate the number of modules they had completed at that point in time. This information was collected in four catagories as shown below:

Check the approximate number of modules you have completed	[ ] 1-9 Modules
	[ ] 10-20 Modules
	[ ] 21-30 Modules
	[ ] 31-40 Modules

The correlation between the mean attitude score and the number of modules completed was only .09. From this data it could be said that the number of modules that students completed had very little to do with the total attitude scores, nor did education grade level have a significant effect on attitude scores.

2. The Western Study

The study "CBVE: A Study to Measure Its Effectiveness in Kentucky" by Roger D. Vincent and Robert A. Cobb measured the attitudes of students, teachers and administrators in Kentucky toward CBVE.

The sample population consisted of 45 vocational administrators, 55 vocational teachers (both high school and postsecondary), and 745 high school and postsecondary students. The identity of the population from which to choose the sample resulted from several meetings with the Bureau of Vocational Education staff in Frankfort, Kentucky. The sample selection was accomplished via computer generated random numbers and comprised 25 percent of the entire target population of educators and students using CBVE in the state of Kentucky.

Individual identities were coded and then disregarded, thus assuring anonymity. As a result, vocational education regions are identifiable, but individuals within the regions are not.

In an attempt to ascertain whether Competency Based Vocational Education is meeting its self-stated goals, reactions were sought from those directly involved in the implementation of CBVE. In an effort to determine the prevailing attitude toward CBVE, teacher, student, (a modification of Thomas' validated instrument) and administrator questionnaires were developed. A copy of each instrument follows in Tables 6-8.

All instruments were subjected to content validity checks, with the student questionnaire undergoing additional tests of reliability. Reliability tests on the teacher and administrator instruments were not conducted due to time and budgetary constraints. The more rigorous tests of extensive validation and reliability characteristic of standardized measurement and data collection devices were not performed on the questionnaires due to constraints previously mentioned.

Once the sample was selected, a meeting between research staff and the CBVE Steering Committee was held. It was determined that regional contact persons, because of their familiarity with the school personnel, could best distribute the individual classroom and school questionnaires.

Fourteen regional contact persons were contacted, and complete sets of addressed questionnaires were hand delivered to each contact person in every vocational education region of Kentucky.

This method of dissemination proved to be most effective as approximately 90 percent of all questionnaires were returned.

The sample for the survey was obtained via computer generated random numbers and consisted of 25 percent of each occupational area using CBVE instructional methodology. Forty-nine administrator surveys were hand disseminated via regional contact persons, and 43 were returned yielding an 88 percent return rate for this group. Fifty-nine teacher surveys were hand disseminated via regional contact persons, and 55 were returned yielding a 93 percent return rate. As individual class size varied, it was impractical to compute the exact number of student surveys to deliver, therefore, an estimate of 20 surveys per teacher was disseminated. The total number of classes responding is the same as the number of teachers, 93 percent (N = 745 students).

The survey research was based upon three project developed attitudinal surveys. The teacher, administrator and student surveys were designed to measure attitudes toward CBVE across each of the three surveyed groups.

The attitudinal surveys are presented in Tables 6, 7, and 8. Frequency counts percentages have been adjusted to account for missing data.

The data reflect a high concensus of favorable response among students with regard to the instructional components of CBVE modules. For example, as shown in Table 6, 84 percent of the students reported that the self-check sections of the modules were of value to them, 72 percent felt that the learning activities were easy to follow, 83 percent reported that the illustrations in the modules were helpful. In addition, 78.6 percent of the students felt that the overall reading level of the modules was not difficult. Similarly, 82 percent of the teachers surveyed felt that the reading level of modules was equal to their students' abilities, and 89 percent reported that their students progressed from module to module without difficulty (Table 7).

This finding is particularly interesting in that some CBVE innovators have expressed concern about the reading level found in the modules.

All groups indicated the learning objectives to be accurate and necessary information when seeking employment in the respective occupational areas (Tables 6--Item 38, Table 7--Item 9, and Table 8--Item 25).

Overall, the results of the three surveys presented in Tables 6, 7, and 8, give very strong support for the CBVE program as it has been implemented. Students (Table 6) responded very favorably to statements concerning materials, teacher techniques and attitudes, and the general use of CBVE. In view of the many favorable responses to the majority of the statements, it is interesting to note that students also indicated they did not want modules used in other classes (Statement 20), that classes are not more enjoyable when CBVE is used (Statement 24), and that CBVE modules were somewhat boring (Statement 25). Teachers participating in the CBVE program also responded favorably to most of the statements appearing on their questionnaire (Table 7). However, the teachers indicated they did not believe their students were any better motivated by CBVE (Statement 22), that CBVE did not reduce attrition (Statement 25), that CBVE did not increase enrollment (Statement 28), and that student interest in the class did not increase (Statement 33). Finally, administrators (Table 8) also gave very favorable reactions to CBVE, as it was implemented in their schools. Indications were given that CBVE could not accommodate 10 percent more students (Statement 4) and, as also indicated by the teachers, it did not reduce attrition (Statement 7).

As indicated previously, a vast majority of statements on all three questionnaires, received responses favorable to the concept of CBVE (greater than 50 percent of sample answering in favorable direction on a given item). Of those surveyed, 60 to 70 percent of the student sample, 70 to 80 percent of the teachers, and 80 to 90 percent of the administrators responded favorably to CBVE as an instructional method.

TABLE 6

TOTAL STUDENT QUESTIONNAIRE ADJUSTED PERCENT RESPONSE

Item	% SA	% A	% D	% SD	% SA+A	% D+SD
1. The learning activities instructions are clear and to the point.	16.9	67.1	14.4	1.6	84.0	16.0
2. The student self-checks are very valuable.	23.9	60.3	13.5	2.3	84.2	15.8
3. I feel confused by the instruction sheets within the modules.	7.4	21.8	58.5	12.3	29.2	70.8
*4. My teacher is always friendly toward students.	43.3	41.0	11.9	3.8	84.3	15.7
5. Completing CBVE modules is a good use of my time.	15.2	51.3	24.7	8.8	66.5	33.5
6. The modules help me to solve problems.	12.6	54.0	29.6	3.9	66.6	32.9
7. I can apply very little of what is in the modules to practical situations.	4.8	34.1	44.6	16.4	38.9	61.0
8. CBVE instruction does not seem to be any better than the kind of instruction we had before.	9.5	29.8	47.9	12.8	39.3	60.7
9. I have difficulty reading the material in the modules.	4.0	17.4	61.9	16.7	21.4	78.6
*10. My teacher knows a lot about the subject.	47.8	44.2	5.3	2.7	92.0	8.0
11. The instructor's final checklist helps me know what performance my teacher expects of me.	24.2	63.2	11.1	1.6	87.4	12.7
12. While working on the modules, I feel isolated and all alone.	8.0	25.2	50.4	16.4	33.2	66.8

TABLE 6 - Continued

	Item	% SA	% A	% D	% SD	% SA+A	% D+SD
*13.	My teacher is never dull or boring.	26.7	37.8	24.8	10.7	64.5	35.5
14.	Using CBVE modules has increased my ability to think on my own.	13.8	55.1	25.0	6.1	68.9	31.1
15.	I think CBVE is a big joke.	10.2	9.2	50.1	30.5	19.4	80.6
16.	I have enough time to learn the materials that are in the modules.	14.7	55.7	23.1	6.5	70.4	29.6
17.	CBVE is a poor way to learn skills.	7.9	15.5	52.1	24.5	23.4	76.6
*18.	My teacher expects a lot from students.	14.1	45.9	35.5	4.5	60.0	40.0
19.	I would like my teacher to teach the way she/he did before CBVE.	18.2	29.4	41.5	10.8	47.6	52.3
20.	I think my other classes should also use modules.	10.1	27.1	35.9	26.8	37.2	62.7
*21.	My teacher asks for students' opinions before making decisions.	10.1	55.9	27.6	6.4	66.0	34.0
22.	I don't really understand what CBVE is all about.	6.9	24.6	58.5	10.0	31.5	68.5
23.	When we use CBVE, my teacher has more time to work with us individually.	13.6	49.3	27.7	9.4	62.9	37.1
24.	I enjoy class more when we use CBVE.	11.4	33.7	37.9	17.0	45.1	54.9
25.	I am often bored when I use CBVE modules.	20.0	34.6	36.1	9.2	54.6	45.3

TABLE 6 - Continued

	Item	% SA	% A	% D	% SD	% SA+A	% D+SD
*26.	My teacher is usually cheerful and optimistic.	26.1	58.2	12.4	3.4	84.3	15.8
27.	The slide-tape presentations add very little to CBVE instructions.	5.1	26.3	50.3	18.3	31.4	68.6
28.	My teacher never has enough time to answer my questions about the material in the modules.	2.6	9.0	58.0	30.5	11.6	88.5
29.	I am not sure how much I have learned after I complete a module.	9.9	38.0	44.8	7.3	47.9	52.1
30.	The introduction makes me want to learn more about the tasks in the modules.	9.5	44.9	36.6	9.0	54.4	45.6
*31.	My teacher is not confused by unexpected questions.	17.3	60.6	18.3	3.8	77.9	22.1
32.	I seem to learn faster when I use CBVE modules.	10.2	38.0	41.1	10.7	48.2	41.8
33.	It is hard for me to follow the learning activities instructions.	5.1	22.7	61.6	10.6	27.8	72.2
34.	I want to do my best while I am working on a module.	29.1	59.9	8.4	2.6	89.0	11.0
*35.	My teacher makes learning more like fun than work.	15.6	47.1	27.9	9.4	62.7	37.3
36.	I feel at ease when I am working with CBVE modules.	11.0	48.6	32.9	7.5	59.6	40.4
37.	The drawings and illustrations help me to understand the modules better.	18.8	62.5	15.4	3.4	81.3	18.8

TABLE 6 - Continued

	Item	% SA	% A	% D	% SD	% SA+A	% D+SD
38.	The modules give me facts instead of just nice-to-know information.	20.0	63.5	13.9	2.7	83.5	16.6
39.	After completing CBVE, I will feel qualified to get a job.	13.7	46.3	31.5	8.5	60.0	40.0
*40.	My teacher doesn't let students get away with anything.	17.1	42.6	32.0	8.3	59.7	40.3
41.	The CBVE modules do not teach me enough.	9.2	27.2	51.0	12.7	36.4	63.7
42.	The module instruction sheets are easy to follow.	13.9	63.6	19.4	3.2	77.5	22.6
*43.	My teacher often gives students a choice in assignments.	9.7	48.2	32.4	9.8	57.9	42.2
44.	I don't learn much from the student self-checks because the answers are given.	7.4	20.6	56.0	16.0	28.0	72.0
45.	CBVE modules seem to fit my style of learning.	11.6	40.5	31.8	16.1	52.1	47.9
46.	My teacher does not seem to care whether I am learning or not.	3.8	4.4	35.4	56.5	8.2	91.9

*Imbedded SET items N = 745

TABLE 7

TOTAL TEACHER QUESTIONNAIRE ADJUSTED PERCENT RESPONSE

	Item	% SA	% A	% D	% SD	% SA+A	% D+SD
1.	Transition from module to module is difficult for students.		10.9	61.8	27.3	10.9	89.1
2.	Classroom management is difficult when students are using modules.	3.6	20.0	65.5	10.9	23.6	76.4
3.	I have had no major problems assigning grades to my CBVE students.	5.5 5.5	59.2 59.2	27.3 27.3	9.0 9.0	63.7 63.7	36.3 36.3
4.	CBVE allows my students to do more "independent investigations" than my previous method of instruction.	23.6	54.5	20.0	1.9	78.1	21.9
5.	I feel uncomfortable using the CBVE materials.	1.9	11.1	51.9	35.1	13.0	87.0
6.	CBVE restricts my freedom in the classroom.		16.4	52.7	30.9	16.4	83.6
7.	CBVE allows me to keep up to date in my occupational area.	9.1	63.6	18.2	9.1	72.7	27.3
8.	I am unable to diagnose learning difficulties using the CBVE modules.		5.5	72.7	21.8	5.5	94.5
9.	CBVE's objectives are "not in tune" with their respective occupational areas.	1.9	7.4	61.1	29.6	9.3	90.7
10.	CBVE improves overall teacher effectiveness.	10.9	65.5	21.8	1.8	76.4	23.6
11.	CBVE reference and resource materials are available to me.	31.5	63.0	5.5		94.5	5.5
12.	Administrative support for CBVE is strong.	26.9	63.5	7.7	1.9	90.4	9.6

TABLE 7 - Continued

Item	% SA	% A	% D	% SD	% SA+A	% D+SD
13. CBVE is a fad and will be replaced by another system within the next few years.	3.8	17.3	57.7	21.2	21.1	78.9
14. The teachers inservice workshop, which introduces CBVE, does an adequate job.	9.4	71.7	7.5	11.4	81.1	18.9
15. CBVE modules fit into our typical school year.	13.0	70.4	11.1	5.5	83.4	16.6
16. The number of slide tape machines provided is adequate for my students' needs.	16.7	50.0	18.5	14.8	66.7	33.3
17. I often refer to the Instructor's Manual for resource materials and ideas.	9.1	72.7	16.4	1.8	81.8	18.2
18. Using CBVE modules requires more organizational time than do other methods of instruction.	21.8	38.2	36.4	3.6	60.0	40.0
19. There is no major difference in CBVE teaching methodology and the teaching methodology I used before I implemented CBVE.	7.7	30.8	44.2	17.3	38.5	61.5
20. CBVE evaluation is difficult to translate into traditional grading systems.	14.8	31.5	46.3	7.4	46.3	53.7
21. The organization of the Instructor's Manual needs to be simplified.	5.5	28.6	65.5	5.4	29.1	70.9
22. Students are better motivated by the CBVE modules than with my previous instructional methods.	3.7	40.7	50.0	5.6	44.4	55.6
23. Students seem more "task oriented" using CBVE modules.	5.6	70.4	20.4	3.6	76.0	24.0

TABLE 7 - Continued

Item	% SA	% A	% D	% SD	% SA+A	% D+SD
24. The reading level of the modules is too difficult for my students' abilities.		17.0	73.6	9.4	17.0	83.0
25. The introduction of the CBVE module concept has kept students in school who may have dropped out of a traditional program.		31.3	52.0	16.7	31.3	68.7
26. Most students dislike the CBVE approach.	5.5	20.0	63.6	10.9	25.5	74.5
27. Facilities at my school are appropriate for CBVE instruction.	14.5	54.5	20.1	10.9	69.0	31.0
28. CBVE has increased student enrollment in our vocational education program.		9.3	83.7	7.0	9.3	80.7
29. I do not like to teach under a Competency Based Vocational Education System.		3.8	59.6	36.6	3.8	96.2
30. Teaching techniques can be more creative with CBVE materials.	5.7	64.2	26.4	3.8	69.8	30.2
31. My audio visual equipment frequently breaks down.	1.9	13.5	67.3	17.3	15.4	84.6
32. The students like the module presentation better than the traditional forms of presenting material.	11.5	50.0	36.5	2.0	61.5	38.5
33. More students than ever before have expressed interest in taking my class since CBVE was implemented.		21.7	73.9	4.4	21.7	78.3
34. Students are not able to complete as much material with the CBVE modules as with traditional methods.	2.0	21.6	62.7	13.7	23.6	76.4

TABLE 7 - Continued

Item	% SA	% A	% D	% SD	% SA+A	% D+SD
35. Students progress at a faster rate since I implemented CBVE.	1.9	55.8	40.4	1.9	57.7	42.3
36. Individualized instruction allows students to "get by" with little effort.	1.9	14.8	63.0	20.3	16.7	83.3
37. My CBVE students are learning more subject matter than the students I have taught using traditional teaching methods.	11.3	47.2	35.8	5.7	58.5	41.5

N = 55

TABLE 3

TOTAL ADMINISTRATOR QUESTIONNAIRE ADJUSTED PERCENT RESPONSE

Item	% SA	% A	% D	% SD	% SA+A	% D+SD
1. Teacher support for CBVE in our school is strong.	41.9	48.8	9.3		90.7	9.3
2. CBVE modules fit into our typical school year.	20.9	72.1	7.0		93.0	7.0
3. CBVE discourages student enrollment in our vocational education programs.		2.4	56.1	41.5	2.4	97.6
4. The CBVE program could accommodate a minimum of 10 percent increased enrollment.	2.3	37.2	41.9	18.6	39.5	60.5
5. The number of slide-tape machines provided by the CBVE program is inadequate.	23.3	27.9	41.9	7.0	51.2	48.9
6. There are too many "administrative problems" associated with CBVE.		7.0	76.7	16.3	7.0	93.0
7. The drop-out rate for vocational students has decreased since the implementation of CBVE.		32.4	62.2	5.4	32.4	67.6
8. CBVE is another educational fad and will be replaced by another system within the next few years.	2.4	12.2	73.2	12.2	14.6	85.4
9. Our teachers report that classroom management is difficult when students are using CBVE.		20.9	62.8	16.3	20.9	79.1
10. CBVE is more "cost effective" in our school than are traditional methods of instruction.	2.6	43.6	51.3	2.6	46.2	53.9

TABLE 8 - Continued

Item	% SA	% A	% D	% SD	% SA+A	% D+SD
11. Facilities at our school are appropriate for CBVE instruction.	9.3	53.5	25.6	11.6	62.8	37.2
12. There is no major difference in CBVE teaching methodology and the teaching methodology used by our teachers before CBVE was implemented.	2.3	14.0	76.7	7.0	16.3	83.7
13. CBVE evaluation is compatible with the traditional grading system used in our school.	2.3	67.4	27.9	2.3	69.7	30.2
14. The teachers inservice workshop, which introduces CBVE, does an adequate job.	7.1	81.0	11.9		88.1	11.9
15. The ease of using CBVE instruction hampers professional development in teachers.	2.3		67.4	30.2	2.3	97.6
16. The CBVE Instructor's Manuals provide helpful resource material and ideas for teachers.	11.6	86.0	2.3		97.6	2.3
17. CBVE increases teachers' effectiveness.	19.0	69.0	11.9		88.0	11.9
18. Teachers in my school have expressed satisfaction with CBVE.	18.6	69.8	11.6		88.4	11.6
19. I spend much time locating materials and answering teachers' questions regarding the implementation of CBVE.	2.4	14.6	70.7	12.2	17.0	82.9
20. CBVE requires more administrative resources than other methods of instruction.		32.6	60.5	7.0	32.6	67.5
21. CBVE modules and resource materials are easily obtained for our vocational education program.	11.6	44.2	37.2	7.0	55.8	44.2

TABLE 8 - Continued

Item	% SA	% A	% D	% SD	% SA+A	% D+SD
22. The modules and performance objectives of CBVE meet the needs of the students in our vocational education program.	11.6	72.1	11.6	4.7	83.7	16.3
23. Designing our vocational education program around the CBVE concept is difficult.		16.3	74.4	9.3	16.3	83.7
24. Students seem to progress at a faster rate since CBVE was implemented.	2.4	61.0	34.1	2.4	63.4	36.5
25. CBVE does not offer students the levels of proficiency required by job entry standards in our community.	4.7	7.0	79.1	9.3	11.7	88.4

N = 43

TABLE 9

MEAN CST SCORES

Area	Pretest$_1$	IM (IP1)[a]	Posttest$_1$	GS[c]	Pretest$_2$	IM (IP2)[b]	Posttest$_2$	GS[c]	N
Bank Teller		Modules 39 - 41				Modules 42 - 46			
Class A	10.30	CBVE	17.70	7.40	7.25	TRADITIONAL	14.45	7.20	20
Class B	9.87	CBVE	14.28	4.41	6.50	TRADITIONAL	17.25	10.75	8
Class C	10.31	TRADITIONAL	14.92	4.61	6.92	CBVE	19.44	12.52	13
Class D	11.36	TRADITIONAL	16.64	5.28	8.21	CBVE	20.00	11.79	14
Secretary		Modules 38 - 40				Modules 41 - 43			
Class A	8.96	CBVE	13.95	4.99	9.96	TRADITIONAL	13.05	3.09	23
Class B	8.00	CBVE	12.67	4.07	6.83	TRADITIONAL	N/A	N/A	6
Class C	10.50	TRADITIONAL	13.70	3.20	9.57	CBVE	12.14	2.57	28
Class D	6.57	TRADITIONAL	9.83	3.26	6.00	CBVE	11.00	5.00	14
Tractor Mechanics		Modules 34 - 36				Modules 37 - 40			
Class A	3.54	CBVE	6.27	2.73	6.64	TRADITIONAL	8.00	1.36	11
Class B	4.60	CBVE	8.47	3.87	7.30	TRADITIONAL	9.84	2.54	20
Class C	5.44	TRADITIONAL	6.00	.56	7.19	CBVE	13.81	6.62	16

[a]Instructional Methodology used during Instructional Period One
[b]Instructional Methodology used during Instructional Period Two
[c]Gain Score - this score is the difference between the pretest and posttest means

V Analysis of Data on the Effectiveness of CBVE

The Western Study

This research design was based on a classical pretest-posttest experimental design. The pretesting was necessary as complete randomization could not be assured. Figure 1 illustrates this design.

(1)	(2)	(3)	(4)
S	T_1	X_1	T_2
S	T_1	X_2	T_2

Figure 1

The symbols used are as follows:

S = Selection of sample
T_1= Pretest
X_1= Treatment type 1
X_2= Treatment type 2
T_2= Posttest

Twelve Kentucky vocational education teachers were subjectively selected based on information supplied by the CBVE Steering Committee. Teachers were chosen on the basis of experience with CBVE, occupational areas taught, vocational region in which the teacher taught and willingness to participate.

Three occupational areas consisting of bank teller, secretary and tractor mechanics were represented by the twelve teachers. Each occupational area was taught by four teachers.

A more complex design was extended from the pretest-posttest design. Figure 2 illustrates this design in its entirety. This design allowed comparisons within groups as well as between groups. For example, bank teller (BT) teacher "1" taught a given set of modules or objectives. During instructional period one (IP1), the first half of the modules were taught using CBVE, and during instructional period two (IP2), the remaining modules were taught using traditional methodology. BT teacher "2" taught the same set of modules but in reverse teaching methodology sequence to BT teacher "1."

Class	Pre-Measurement	Sequence of Treatment	Post-Measurement	N Size
BT_1	CST	X_1 ; X_2	CST,PST	7
BT_2	CST	X_2 ; X_1	CST,PST	11
BT_3	CST	X_1 ; X_2	CST,PST	13
BT_4	CST	X_2 ; X_1	CST,PST	15
S_1	CST	X_1 ; X_2	CST,PST	23
S_2	CST	X_2 ; X_1	CST,PST	20
S_3	CST	X_1 ; X_2	CST,PST	14
S_4	CST	X_2 ; X_1	CST,PST	29
TM_1	CST	X_1 ; X_2	CST,PST	16
TM_2	CST	X_2 ; X_1	CST,PST	11
TM_3	CST	X_1 ; X_2	CST,PST	20
TM_4	CST	X_2 ; X_1	CST,PST	15

where: BT = Bank Teller
S = Secretary
TM = Tractor Mechanics
X_1 = CBVE Instructional Approach
X_2 = Traditional Instruction Approach
CST = Cognitive Skill Test
PST = Performance Skill Test

Figure 2

The Cognitive Skill Test (CST) was developed to assess the cognitive domain, while the Performance Skill Test (PST) was developed to assess the applied skills of the subjects. In order to gain a more accurate observation of the learning situation, a tracking system was designed to measure variables of student effort, attitude toward learning, length of trial attempts, completion rates, and dates of initiation and completion. These variables were subjectively reported by the classroom teacher through the use of the Classroom Summary Report (CSR). These data collectively formed the basis for the total Student Monitoring System.

Cognitive Skill Tests (CST's) were developed for each of the occupational areas in the experimental design. The CST items were selected from the instruction sheets, student self-checks, instructor's final checklists, check-out activities and objectives as outlined in the individual instructional modules

of each vocational area. The instruments were further revised based on objectives found in the CBVE/V-TECS catalogue of objectives. Due to time and budget limitations, field testing and reliability checks were not performed. However, instructors who were to receive the CST's were shown the tests in advance and commented favorably on the representativeness of the item pool. The CST pretests consisting of the total item pool for each subject area may be found in Appendix D.

The pretest consists of the total item pool generated for an individual subject area (those items which are incorporated in the mid-test and posttest). The mid-test is comprised of items drawn from those modules taught during Instructional Period 1 (IP1) while posttest items were derived from those modules taught during Instructional Period 2 (IP2).

In an attempt to measure the applied skills resulting from the two methods of instruction, PST's for each occupational area were developed. The PST is composed of final check-out activities found in the respective CBVE module. As the learning objectives were the same for each teaching methodology, the check-out activities were reworded, and condensed into a precise, practical format. The PST was employed on a posttest basis only. The rationale for this was twofold: (a) pragmatic limitations, i.e., time requirements for teachers and students; and (b) the CST could serve as a pretest in determining equality of grouping. An example of a PST may be found in Appendix E.

The purpose of the SMS was to obtain and record data that could not otherwise be obtained through the CST or the PST. The system monitored the student's rate of completion, attitude and effort, evaluation, and attendance. The SMS utilized a Classroom Summary Report (CSR) which was completed by the teacher. A CSR was completed for each student after the student completed a module. The CSR data were then returned and the data keypunched for computer analysis which compiled student progress. A copy of the CSR may be found in Appendix F.

All instruments and data collecting tools were hand disseminated to the twelve participating teachers. During dissemination, additional orientation information was shared, and questions from teachers were answered. Teachers agreed to return the completed materials by May 30, 1977. One teacher failed to participate due to a lack of CBVE module materials; one failed to complete the CSR's; one completed only half the project due to illness; all others returned complete data.

The CST was administered on a pretest-posttest basis to 11 of the 12 classes of bank teller, secretary, and tractor mechanics (one class of tractor mechanics withdrew from the study). Table 10 reveals the mean CST scores for all classes. $Pretest_1$ and $posttest_1$ means reflect the results of Instructional Period 1 (IP1), while $pretest_2$ and $posttest_2$ means reflect Instructional Period 2 (IP2) results. An apparent trend exists in the "gain scores" from Table 10. (The gain measure is the difference between the pretest mean and the posttest mean.) When CBVE was used for instructional delivery, a higher gain score was obtained in every class except Bank Teller Class B, IP1 and Secretary Class C, IP2. One possible explanation for this trend is that CBVE, as a method of instruction, is a more efficient way for students to learn the cognitive skills required for the respective occupational areas.

Tables 11 and 12 reflect the results of an Analysis of Variance (ANOVA) between groups. Classes taught in the CBVE-TRAD instructional sequence were treated as one group, while classes taught in the TRAD-CBVE sequence were treated as the comparison group. Thus, in bank teller, the four classes were combined into two groups.

Table 11 reflects the ANOVA results for IP1, while Table 12 reflects the ANOVA results for IP2 when the instruction methodology changed for each group. The N-sizes were changed during IP2 due to subject mortality within the various classes.

As Table 11 illustrates, four of the six groups began with similar cognitive levels in the subject areas. In tractor mechanics, the traditional approach group had a significantly higher (.05) pretest score than the CBVE approach group. However, the posttest mean of the CBVE group was significantly higher (.05) than the traditional approach group. Although all other CBVE approach groups had higher posttest means than their traditional counterparts, none approached significance during Instruction Period 1.

During Instructional Period 2 (Table 12), all groups had non-significant mean pretest scores. All CBVE groups except secretary had higher mean posttest scores. The bank teller CBVE group had a significantly higher posttest mean (.01) than the traditional bank teller group. The tractor mechanics CBVE group scored significantly higher (.01) than the traditional approach group. Although the Secretary traditional group mean was higher than the CBVE group mean, it is non-significant.

TABLE 10

BETWEEN GROUP ANOVA OF CST SCORES FOR INSTRUCTIONAL PERIOD TWO

Occupational Area	Pretest$_1$	F	Posttest$_1$	F	Modules	N
Bank Teller						
CBVE	10.071	0.966	16.815	0.888	39-41	28
Traditional	10.852		15.846			27
Secretary						
CBVE	8.759	0.301	13.214	0.705	34-40	29
Traditional	9.214		12.513			42
Tractor Mechanics						
CBVE	4.226	5.474*	7.667	8.939*	34-38	31
Traditional	5.438		6.000			16

*Significant at the .05 level

TABLE 11

BETWEEN GROUP ANOVA OF CST SCORES
FOR INSTRUCTIONAL PERIOD TWO

Occupational Area	$Pretest_2$	F	$Posttest_2$	F	Modules	N
Bank Teller						
Traditional	7.036	0.646	15.250	10.854*	42-46	28
CBVE	7.593		19.783			23
Secretary						
Traditional	9.310	1.015	13.045	3.777	41-43	22
CBVE	8.405		11.780			41
Tractor Mechanics						
Traditional	7.065	0.021	9.167	28.757*	37-40	30
CBVE	7.188		13.813			16

*Significant at the .01 level

The data obtained from the CSR's submitted by teachers in the experimental group were subjected to an Analysis of Variance. ANOVA's were performed on classrooms within a given subject area, and between teaching approaches (CBVE vs. Traditional). Additionally, results are presented by instructional period. To aid the reader in interpreting and results, the data are presented in tabular form (see Tables 13, 14, and 15).

The results of Bank Teller Instructional Period One indicate that for modules 39 through 41 students taught in the CBVE approach required significantly less (.05) time to complete the modules. All other ratings showed no significant differences.

Instructional period 2 indicates that Group II (CBVE approach) achieved a significantly higher mean effort rating, mean grade achieved, and mean performance scores than the traditional group. In IP2, the group taught using CBVE took a significantly longer time to complete modules 42 through 46. Bank teller students using the CBVE approach tended to achieve equal or higher CSR variable scores than those students taught using traditional teaching methods.

The results of Secretary Instructional Period One (Table 14) indicate that the group using the CBVE approach achieved a significantly higher grade

and performance score for modules 37 through 40 than did students taught using the traditional approach. The students in the traditional classes also took a longer period of time to complete modules 37 through 40 than group I.

Instructional Period 2 results indicate that there was little or no statistical difference between the CBVE and traditional approaches with the exception of a significant difference in grade achieved with the traditional students scoring higher.

Analysis of the results derived from the Tractor Mechanics Instructional Periods indicates that for IP1 the traditional approach yielded a significantly higher mean score for effort rating, attitude rating, and grade achieved, while the CBVE group took a significantly longer time to complete modules 34 through 36.

For Instructional Period 2, comprised of modules 37 through 40, the group taught in the competency based mode performed at a significantly higher level with respect to mean effort, attitude, grade and performance, than did those taught by the traditional approach. The results also indicate that the CBVE group took significantly less time to complete modules 37 through 40.

TABLE 12

COMPARISON OF CLASSROOM SUMMARY REPORT (CSR)
DATA BY APPROACH--BANK TELLER

Variables	Group I CBVE	Group II Traditional	F	N
Instructional Period #1 -- Modules 39 Through 41				
Mean Effort Rating[a]	4.241	4.462	3.2772	54
Mean Attitude Rating	4.661	4.654	0.0043	54
Mean Grade	3.319	3.220	0.4693	54
Mean Number of Class Periods	2.384	2.538	16.1746*	54
Mean Number of Days Absent	**	**	**	0
Mean Performance Score	2.813	2.815	0.0005	54
Instructional Period #2 -- Modules 42 Through 46				
Mean Effort Rating	3.821	4.4483	17.1692*	51
Mean Attitude Rating	4.486	4.548	6.1545	51
Mean Grade	2.772	3.713	45.3043*	52
Mean Number of Class Periods	1.276	2.330	14.1964*	52
Mean Number of Days Absent	**	**	**	0
Mean Performance Score	2.651	2.979	72.5274*	51

*Significant at the .05 level
**Insufficient data
[a]rating scales used were as follows: effort, 1=lowest, 5=highest
attitude, 1=lowest, 5=highest
performance, 1=not accomplished
3=fully accomplished

TABLE 13

COMPARISON OF CLASSROOM SUMMARY REPORT (CSR)
DATA BY APPROACH--SECRETARY

Instructional Period #1 -- Modules 38 Through 40

Variables	Group I CBVE	Group II Traditional	F	N
Mean Effort Rating	4.714	4.692	0.0373	67
Mean Attitude Rating	4.857	4.684	1.9542	67
Mean Grade	3.881	3.289	17.3933*	66
Mean Number of Class Periods	1.875	3.607	10.05876*	47
Mean Number of Days Absent	3.5	3.5	**	4
Mean Performance Score	2.899	2.794	5.7289*	65

Instructional Period #2 -- Modules 41 Through 43

Variables	Group I Traditional	Group II CBVE	F	N
Mean Effort Rating	4.864	4.675	2.1753	61
Mean Attitude Rating	5.000	4.624	3.5417	61
Mean Grade	3.939	3.694	14.7355*	58
Mean Number of Class Periods	1.636	1.675	0.1667	60
Mean Number of Days Absent	4.667	4.667	**	1
Mean Performance Score	2.961	2.884	2.9641	61

*Significant at the .05 level
**Insufficient data

TABLE 14

COMPARISON OF CLASSROOM SUMMARY REPORT (CSR)
DATA BY APPROACH--TRACTOR MECHANICS

Instructional Period #1 -- Modules 34 Through 36

Variables	Group I CBVE	Group II Traditional	F	N
Mean Effort Rating	2.848	4.333	23.3082*	27
Mean Attitude Rating	2.909	4.333	20.3517*	27
Mean Grade	2.515	3.312	6.3145*	27
Mean Number of Class Periods	2.909	1.854	38.7502*	27
Mean Number of Days Absent	**	**	**	0
Mean Performance Score	2.791	2.873	1.5605	46

Instructional Period #2 -- Modules 37 Through 40

Variables	Group I Traditional	Group II CBVE	F	N
Mean Effort Rating	3.114	4.719	31.3215*	27
Mean Attitude Rating	3.068	4.703	39.4619*	27
Mean Grade	2.900	3.672	8.8082*	26
Mean Number of Class Periods	3.300	2.281	21.2614*	26
Mean Number of Days Absent	1.25	1.25	**	1
Mean Performance Score	2.428	2.925	18.5813*	27

*Significant at the .05 level
**Insufficient data

VI About the Module

Kentucky has made a commitment to develop an instructional package that would serve as a delivery system within the vocational education organization. The V-TECS objectives are the core of the delivery system.

A document titled Handbook for the Development of Vocational Education Modules was developed by Glen Fardig in the Curriculum Development Center for use by teacher module writers and curriculum specialists. This handbook was to aid in the production of modules in that the components of a module were explained in detail and illustrations were included. This baseline document provided a standardized format which could be used across all the vocational education service areas.

The process of developing individualized instructional modules in Kentucky was based upon the validated performance objectives found in the V-TECS catalogs. The actual development of instructional modules involved the use of selected vocational teachers who served as module writers. These teachers used their occupational expertise in conjunction with the objectives found in the catalogs as the basis for module development.

The basic components of each module included the module title with objective numbers, introduction, directions, objectives, learning activities, instruction sheets, student self-checks, instructor's final checklist and the final check-out activities. Slide-tape presentations supported learning activities in many of the modules.

With increased emphasis being placed upon the development of new modules and the revision of field tested modules of instruction, it appears to be an appropriate time to assess the attitudes of those individuals who have developed skills through the use of competency based modules of instruction. Input from students should be a part of the formative evaluative process which will ultimately improve this form of instruction.

Modules of instruction have been developed in nine different occupational areas. A systematic and valid method of obtaining information from students concerning their attitudes toward competency based individualized instructional modules was needed by curriculum specialists, teacher educators, staff of the Bureau of Vocational Education, and local schools to assist in the development of a practical and meaningful vocational education system of instruction.

After developing and validating an instrument that can be used in assessing the attitudes students have toward competency based individualized modules of instruction the data collected on attitudes toward CBVE for the Thomas study reported earlier was further analyzed according to 10 sub-sets concerning student attitudes toward modules and elements of modules. (See Appendix B)

Table 15 shows a significant difference between occupational programs and sources of variability for sub-set scores. The sub-sets on general attitude, student interest, readability, solving problems and student self-check, displayed a significant degree of variability. These are analyzed further for implications for module revision in the following pages.

The variability was not significant for sub-sets of value of content, media, learning activities, instruction sheets, and instructor's final checklist. This suggests that there is no difference in the quality of the modules for these elements.

Table 17 shows the correlation of sub-set mean scores. A high correlation existed between general attitude and student interest. This would be expected. Very little correlation existed between many of the sub-set totals, suggesting that they are independent of each other and can be treated as separate entities in analysis and revision.

Table 15

MEAN SQUARES AND F RATIOS OF OCCUPATIONAL PROGRAMS TO SUB-SET ATTITUDE SCORES

Source	df	Mean Square	F	P
Occupational Programs x General Attitude	8	1142.53	7.34	Significant at .002 level
Occupational Programs x Student Interest	8	43.36	5.29	Significant at .001 level
Occupational Programs x Value of Content	8	67.52	7.57	Not Significant
Occupational Programs x Readability	8	19.74	4.13	Significant at .001 level
Occupational Programs x Media	8	94.05	14.83	Not Significant
Occupational Programs x Solving Problems	8	12.43	3.21	Significant at .001 level
Occupational Programs x Learning Activities	8	19.79	4.90	Not Significant
Occupational Programs x Instruction Sheets	8	20.09	4.62	Not Significant
Occupational Programs x Student Self-Check	8	47.36	4.47	Significant at .001 level
Occupational Programs x Instructor's Final Checklist	8	18.70	5.89	Not Significant

TABLE 16

COMPARISON OF SUB-SET TOTALS

	GENERAL ATTITUDE	STUDENT INTEREST	VALUE OF CONTENT	READIBILITY	MEDIA	SOLVING PROBLEMS	LEARNING ACTIVITIES	INSTRUCTION SHEETS	STUDENT SELF-CHECKS	INSTRUCTOR'S FINAL CHECKLIST
GENERAL ATTITUDE	—	.7	.6	.4	.4	.6	.5	.7	.2	.4
STUDENT INTEREST	.7	—	.4	.2	.3	.6	.3	.5	.2	.4
VALUE OF CONTENT	.6	.4	—	.3	.3	.5	.4	.5	.2	.5
READIBILITY	.4	.2	.3	—	.2	.2	.4	.3	.08	.2
MEDIA	.4	.3	.3	.2	—	.4	.3	.3	.1	.3
SOLVING PROBLEMS	.6	.6	.5	.2	.4	—	.3	.5	.2	.4
LEARNING ACTIVITIES	.5	.3	.4	.4	.3	.3	—	.4	.1	.3
INSTRUCTION SHEETS	.7	.5	.5	.3	.3	.5	.4	—	.2	.4
STUDENT SELF-CHECKS	.2	.2	.2	.08	.1	.2	.1	.2	—	.2
INSTRUCTOR'S FINAL CHECKLIST	.4	.4	.5	.2	.3	.4	.3	.4	.2	—

Analysis of variance determined that there was a significant difference among scores for the nine different occupational areas for the following sub-sets: student interest, readability, solving problems and student self-check.

These sub-sets were subjected to the Duncan Multiple Range Test to determine which occupational groups clustered together and which were significantly different from each other.

Table 17

DUNCAN MULTIPLE RANGE TEST RESULTS
FOR GENERAL ATTITUDE MEAN SCORES*

Ranking	Occupational Area	Final Study Cell Mean
Group 1	Bank Teller	61.84
	Secretarial	58.45
	Tractor Mechanics	57.31
Group 2	Food Preparation	54.63
	Cashier-Checker	54.23
Group 3	Auto Body	52.89
	Child Care Worker	52.63
	Machine Shop	51.81
	Carpentry	49.89

*Where Group 1 is the highest score and each group is significantly different from each other group but not significantly different from other members of the group

Overall attitudes of bank teller, secretarial, and tractor mechanics students are the most favorable; food preparation and cashier-checker students represent a middle-level of attitude; and auto body, child care worker, machine shop and carpentry students are the least favorable toward CBVE.

It appears that differences in attitudes are attributable to differences in students' attitudes on the student interest, readability, solving problems, and student self-check sub-sets.

Table 18

DUNCAN MULTIPLE RANGE TEST RESULTS
FOR STUDENT INTEREST SUB-SET*

Ranking	Occupational Area	Final Study Cell Mean
Group 1	Bank Teller	12.06
	Secretarial	11.78
Group 2	Food Preparation	11.35
	Child Care Worker	11.30
Group 3	Auto Body	10.78
	Machine Shop	10.53
	Cashier-Checker	10.50
	Tractor Mechanics	10.39
	Carpentry	9.99

*Where Group 1 is the highest score and each group is significantly different from each other group but not significantly different from other members of the group

For student interest, bank teller and secretarial students scored the most favorable, food preparation and child care worker students represent a middle-level of attitude on student interest; and auto body, machine shop, cashier-checker, tractor mechanics, and carpentry have the least interest in the programs in which they are enrolled.

With the exception of students, child care worker and cashier-checker whose order is reversed and tractor mechanics which placed in the highest cell on general attitude and in the lowest cell for student interest, it appears that student interest accounts for most of the variability in attitude scores.

This has implications, not for revising modules but for examining admissions procedures to ensure insofar as is possible that students are enrolled in vocational programs in which they have a high degree of interest.

Table 19

DUNCAN MULTIPLE RANGE TEST RESULTS
FOR READABILITY SUB-SET MEAN SCORES*

RANKING	OCCUPATIONAL AREA	FINAL STUDY CELL MEAN
Group 1	Bank Teller	8.48
	Food Preparation	8.18
	Child Care Worker	8.18
Group 2	Tractor Mechanics	7.60
	Secretarial	7.57
Group 3	Cashier Checker	7.34
	Auto Body	7.27
Group 4	Machine Shop	7.21
	Carpentry	7.04

*Where Group 1 is the highest score and each group is significantly different from each other group but not significantly different from other members of the group.

Students in bank teller, food preparation and child care worker programs, rated the modules as the most readable, students in tractor mechanics and secretarial classes gave a medium high rating to module readability; students in cashier checker and auto body programs rated module readability medium low and students in machine shop and carpentry classes said modules were the least easy to read than all others studied.

Table 20

DUNCAN MULTIPLE RANGE TEST RESULTS
FOR SOLVING PROBLEMS SUB-SET MEAN SCORES*

RANKING	OCCUPATIONAL AREA	FINAL STUDY CELL MEAN
Group 1	Bank Teller	8.24
	Secretarial	7.74
	Tractor Mechanics	7.63
Group 2	Child Care Worker	7.54
Group 3	Auto Body	7.44
	Food Preparation	7.33
Group 4	Carpentry	7.13
	Cashier Checker	7.09
	Machine Shop	6.85

*Where Group 1 is the highest score and each group is significantly different from each other group but not significantly different from other members of the group.

Students in bank teller, secretarial and tractor mechanics classes rated the ability of the modules to help them solve problems the highest; child care worker students represented a separate medium high rating; auto body and food preparation students gave a medium low rating to this factor and carpentry, cashier checker and machine shop students rated the ability of modules to help them solve problems the lowest of those studied.

Table 21

DUNCAN MULTIPLE RANGE TEST RESULTS FOR
STUDENT SELF-CHECK SUB-SET MEAN SCORES*

RANKING	OCCUPATIONAL AREA	FINAL STUDY CELL MEAN
Group 1	Secretarial	9.17
	Bank Teller	8.26
Group 2	Carpentry	7.44
	Child Care Worker	7.33
	Tractor Mechanics	7.23
	Auto Body	7.20
	Cashier Checker	7.15
Group 3	Machine Shop	7.01
	Food Preparation	6.93

*Where Group 1 is the highest score and each group is significantly different from each other group but not significantly different from other members of the group.

Secretarial and bank teller students found the student self-check most helpful; students in carpentry, child care, tractor mechanics, auto body, and cashier checker classes found self-checks helpful to a medium degree and students in machine shop and food preparation programs found student self-checks the least helpful.

Child care worker, cashier checker and tractor mechanics students were the three groups of students for which student interest did not seem to equate with overall attitude scores.

Child care worker students rated the readability of the modules the highest of all groups, this seems to be reflected in raising the student interest ranking to medium, exceeding the low and medium low ranks given other factors.

Cashier checker students rated modules the least helpful in helping them solve problems. This low rating, significantly lower than ratings by the same students on other factors, appears to have pulled down their student interest rating to the lowest level also.

Tractor mechanics students rated the ability of modules to help them solve problems the highest, significantly higher than their overall rankings for other factors. This appears to have pulled up their overall attitude rating to the highest level, despite the lowest rating for student interest.

It appears that student interest determines in large part a student's attitude toward CBVE modules. It appears also that high levels of readability of modules can have a positive effect on student interest. Further, the data seem to show an indication that modules designed to aid students to solve problems independently may enhance the student's general attitude toward CBVE, despite low interest. Modules that do not contain information that will help students solve problems independently appear to have a negative effect on student interest.

The effects of CBVE and the components of CBVE modules on student interest and general attitude toward CBVE should be subjected to further study. If redesigning components of the modules can enhance student interest and promote more favorable attitudes, CBVE will be an even more effective instructional method.

An additional notation should be made that the rating of food preparation students for the student self-check was significantly lower than mean ratings this group gave to other subsets of the module. This affected the students' overall general attitude and the self-check component for these modules should be analyzed and possibly revised to bring them more in line with the quality (as seen by students) of other components of the modules.

APPENDIX A

ATTITUDE INVENTORY OF

COMPETENCY-BASED INDIVIDUALIZED INSTRUCTIONAL MODULES

Developed By

John C. Thomas, Curriculum Specialist
University of Kentucky
College of Education
Vocational Education
Curriculum Development Center
151 Taylor Education Building
Lexington, KY 40506

PART A

1. Check appropriate box

   [ ] Female [ ] Male

2. Check your present grade level

   [ ] High school junior [ ] Post-Secondary [ ] Other_____

   [ ] High school senior [ ] Apprenticeship

3. Check your vocational area

   Agriculture
   [ ] Tractor Mechanics

   Business and Office
   [ ] Secretarial
   [ ] Bank Teller

   Distributive Education
   [ ] Cashier Checker

   Health
   [ ] Dental Assistant

   Home Economics
   [ ] Food Preparation
   [ ] Child Care Worker

   Industrial Education
   [ ] Auto Body
   [ ] Carpentry
   [ ] Machine Shop

4. Check the approximate number of modules you have completed

   [ ] 1 - 9 Modules [ ] 21 - 30 Modules

   [ ] 10 - 20 Modules [ ] 31 - 40 Modules

5. Check the appropriate box

   I have been -

   [ ] Highly successful in this class [ ] Somewhat unsuccessful in this class

   [ ] Moderately successful in this class [ ] Unsuccessful in this class

PART B

Instructions for Survey:

The following is a survey of your opinion regarding statements about competency-based instructional modules. The Module consists of an Introduction, Directions, Objectives, Learning Activities, Instruction Sheets, Student Self-Checks, and Instructor's Final Checklist. There are no right or wrong answers, so do not hesitate to mark the statements frankly. We want your personal opinion. Whether you agree or disagree with any statement, you can be sure that many other people feel the same as you do. Please be sure you DO NOT OMIT ANY STATEMENT. Place an X in the appropriate bracket.

Example:

Schools can help to develop positive attitudes toward work.	[ ]	[X]	[ ]	[ ]	[ ]
	Agree Very Much	Agree a Little	No Opinion	Disagree a Little	Disagree Very Much
1. The instructional modules were very difficult to understand.	[ ]	[ ]	[ ]	[ ]	[ ]
2. The information presented in the modules was helpful.	[ ]	[ ]	[ ]	[ ]	[ ]
3. I was not sure how much I learned when I completed a module.	[ ]	[ ]	[ ]	[ ]	[ ]
4. The student self-checks were very valuable.	[ ]	[ ]	[ ]	[ ]	[ ]
5. This type of instruction was very boring.	[ ]	[ ]	[ ]	[ ]	[ ]
6. I felt at ease when I was working with the instructional modules.	[ ]	[ ]	[ ]	[ ]	[ ]
7. The slide-tape presentations made the modules more meaningful.	[ ]	[ ]	[ ]	[ ]	[ ]
8. It was hard for me to follow the learning activities instructions.	[ ]	[ ]	[ ]	[ ]	[ ]
9. I had no difficulty in reading the material in the modules.	[ ]	[ ]	[ ]	[ ]	[ ]
10. The modules made instruction too specific.	[ ]	[ ]	[ ]	[ ]	[ ]
11. This method of instruction does not seem to be any better than the methods we used before.	[ ]	[ ]	[ ]	[ ]	[ ]

	Agree Very Much	Agree a Little	No Opinion	Disagree a Little	Disagree Very Much
12. The instructor's final checklist helped me to know what performance was expected upon completing a module.	[ ]	[ ]	[ ]	[ ]	[ ]
13. I was just glad to get through each module.	[ ]	[ ]	[ ]	[ ]	[ ]
14. I can apply very little of what was in the modules to a work situation.	[ ]	[ ]	[ ]	[ ]	[ ]
15. The modules helped me to solve problems.	[ ]	[ ]	[ ]	[ ]	[ ]
16. The introduction made me want to learn more about the tasks in the module.	[ ]	[ ]	[ ]	[ ]	[ ]
17. I felt that I wanted to do my best while working on a module.	[ ]	[ ]	[ ]	[ ]	[ ]
18. I seemed to learn faster with this form of instruction.	[ ]	[ ]	[ ]	[ ]	[ ]
19. There was enough time to learn materials that were in the modules.	[ ]	[ ]	[ ]	[ ]	[ ]
20. I felt frustrated by the instruction sheets within the modules.	[ ]	[ ]	[ ]	[ ]	[ ]
21. This is a poor way to develop skills.	[ ]	[ ]	[ ]	[ ]	[ ]
22. Modules make learning too mechanical.	[ ]	[ ]	[ ]	[ ]	[ ]
23. Completing instructional modules was a good use of my time.	[ ]	[ ]	[ ]	[ ]	[ ]
24. The drawings and illustrations helped me to better understand the module.	[ ]	[ ]	[ ]	[ ]	[ ]
25. While working on the modules I felt isolated and all alone.	[ ]	[ ]	[ ]	[ ]	[ ]

	Agree Very Much	Agree a Little	No Opinion	Disagree a Little	Disagree Very Much
26. I would like more instruction presented in the modular format.	[ ]	[ ]	[ ]	[ ]	[ ]
27. While working on the modules I felt as if someone was talking to me.	[ ]	[ ]	[ ]	[ ]	[ ]
28. Using modules has increased my ability to think.	[ ]	[ ]	[ ]	[ ]	[ ]
29. The modules gave me facts instead of nice-to-know information.	[ ]	[ ]	[ ]	[ ]	[ ]
30. Modules seem to fit my style of learning.	[ ]	[ ]	[ ]	[ ]	[ ]
31. The modules were difficult to read.	[ ]	[ ]	[ ]	[ ]	[ ]
32. The learning activities instructions were clear and to the point.	[ ]	[ ]	[ ]	[ ]	[ ]
33. The modules on the whole are easy to understand.	[ ]	[ ]	[ ]	[ ]	[ ]
34. The instruction sheets were easy to follow.	[ ]	[ ]	[ ]	[ ]	[ ]
35. I enjoyed working on the modules by myself.	[ ]	[ ]	[ ]	[ ]	[ ]
36. I didn't learn much from the student self-checks because the answere were given.	[ ]	[ ]	[ ]	[ ]	[ ]
37. The slide-tape presentations added very little to the instruction.	[ ]	[ ]	[ ]	[ ]	[ ]
38. Modules made learning uninteresting.	[ ]	[ ]	[ ]	[ ]	[ ]

Appendix B

SUB-SET CATEGORIES FOR THE THOMAS STUDY

LEARNING WITH MODULES

1 - The instructional modules were very difficult to understand.

5 - This type of instruction was very boring.

6 + I felt at ease when I was working with the instructional modules.

11 - This method of instruction does not seem to be any better than the methods we used before.

13 - I was just glad to get through each module.

17 + I felt that I wanted to do my best while working on a module.

18 + I seemed to learn faster with this form of instruction.

19 - There was enough time to learn materials that were in the modules.

21 - This is a poor way to learn skills.

22 - Modules make learning too mechanical.

23 + Completing instructional modules was a good use of my time.

25 - While working on the modules I felt isolated and all alone.

26 + I would like more instruction presented in the modular format.

27 + While working on the modules I felt as if someone was talking to me.

30 + Modules seem to fit my style of learning.

33 + The modules on the whole are easy to understand.

35 + I enjoyed working on the modules by myself.

38 - Modules made learning uninteresting.

VALUE OF THE CONTENT

2 + The information presented in the modules was helpful.

10 - The modules made instruction too specific.

14 - I can apply very little of what was in the modules to a practical situation.

29 + The modules gave me facts instead of nice-to-know information.

Note: The + indicates the question has been stated in positive terms.
The - indicates a negatively stated question.

READABILITY

9 + I had no difficulty in reading the material in the modules.

31 - The modules were difficult to read.

MEDIA

7 + The slide-tape presentations made the modules more meaningful.

24 + The drawings and illustrations helped me to better understand the module.

37 - The slide-tape presentations added very little to the instruction.

SOLVING PROBLEMS

15 + The modules helped me to solve problems.

28 + Using modules has increased my ability to think.

PARTS OF THE MODULE:

INTRODUCTION

16 + The introduction made me want to learn more about the tasks in the module.

LEARNING ACTIVITIES

8 - It was hard for me to follow the learning activities instructions.

32 + The learning activities instructions were clear and to the point.

INSTRUCTION SHEETS

20 - I felt frustrated by the instruction sheets within the modules.

34 + The instruction sheets were easy to follow.

STUDENT SELF-CHECKS

4 + The student self-checks were vary valuable.

36 - I didn't learn much from the student self-checks because the answers were given.

Note: The + indicates the question has been stated in positive terms.
The - indicates a negatively stated question.

INSTRUCTOR'S FINAL CHECKLIST

3 - I was not sure how much I learned when I completed a module.

12 + The instructor's final checklist helped me to know what performance was expected upon completing a module.

Note: The + indicates the question has been stated in positive terms.
The - indicates a negatively stated question.

APPENDIX C

Administrator Questionnaire

WESTERN KENTUCKY UNIVERSITY
BOWLING GREEN, KENTUCKY 42101

Center for Career and
Vocational Teacher Education

Dear Teacher/Administrator:

Western Kentucky University and the Bureau of Vocational Education are attempting to document the progress of Competency Based Vocational Education (CBVE) in Kentucky. The data obtained from CBVE programs such as yours will be used to facilitate the future, broader based, implementation of CBVE in Kentucky.

A major part of this effort involves the attitudes of administrators, teachers, and students who have been exposed to CBVE. We are, therefore, requesting your help in assessing attitudes toward CBVE.

Please take a few minutes to fill out the attached survey giving your honest opinions of CBVE. You are not required to sign your name. Data generated by this survey will be tabulated on a state-wide basis; your anonymity is guaranteed, so please feel free to respond as openly as you can.

When you have finished, please return the survey, in the enclosed envelope, to the collection point in your school office. All the surveys will be collected by a member of your vocational regional staff in the next few days.

I wish to thank you in advance for your valuable help in making this project a success.

Sincerely,

Roger D Vincent

Project Director

Please do not sign your name.

COMPETENCY BASED VOCATIONAL EDUCATION

ADMINISTRATOR SURVEY

Below are statements regarding the Competency Based Vocational Education (CBVE) program in your school. Please indicate the extent to which you agree or disagree with these statements by CIRCLING ONE of the following:

SA	A	D	SD
Strongly Agree	Agree	Disagree	Strongly Disagree

1.	Teacher support for CBVE in our school is strong.	SA	A	D	SD
2.	CBVE modules fit into our typical school year.	SA	A	D	SD
3.	CBVE discourages student enrollment in our Vocational Education Programs.	SA	A	D	SD
4.	The CBVE program could accommodate a minimum of 10% increased enrollment.	SA	A	D	SD
5.	The number of slide-tape machines provided by the CBVE program is inadequate.	SA	A	D	SD
6.	There are too many "administrative problems" associated with CBVE.	SA	A	D	SD
7.	The drop-out rate for vocational students has decreased since the implementation of CBVE.	SA	A	D	SD
8.	CBVE is another educational fad and will be replaced by another system within the next few years.	SA	A	D	SD
9.	Our teachers report that classroom management is difficult when students are using CBVE.	SA	A	D	SD
10.	CBVE is more "cost effective" in our school than are traditional methods of instruction.	SA	A	D	SD
11.	Facilities at our school are appropriate for CBVE instruction.	SA	A	D	SD
12.	There is no major difference in CBVE teaching methodology and the teaching methodology used by our teachers before CBVE was implemented.	SA	A	D	SD
13.	CBVE evaluation is compatible with the traditional grading system used in our school.	SA	A	D	SD
14.	The teachers inservice workshop, which introduces CBVE, does an adequate job.	SA	A	D	SD
15.	The ease of using CBVE instruction hampers professional development in teachers.	SA	A	D	SD

16.	The CBVE Instructor's Manuals provide helpful resource material and ideas for teachers.	SA	A	D	SD
17.	CBVE increases teachers' effectiveness.	SA	A	D	SD
18.	Teachers in my school have expressed satisfaction with CBVE.	SA	A	D	SD
19.	I spend much time locating materials and answering teacher's questions regarding the implementation of CBVE.	SA	A	D	SD
20.	CBVE requires more administrative resources than other methods of instruction.	SA	A	D	SD
21.	CBVE modules and resource materials are easily obtained for our Vocational Education Program.	SA	A	D	SD
22.	The modules and performance objectives of CBVE meet the needs of the students in our Vocational Education Program.	SA	A	D	SD
23.	Designing our vocational education program around the CBVE concept is difficult.	SA	A	D	SD
24.	Students seem to progress at a faster rate since CBVE was implemented.	SA	A	D	SD
25.	CBVE does not offer students the levels of proficiency required by job entry standards in our community.	SA	A	D	SD

APPENDIX D

Sample CST Pretest

Pre-Test: Objectives BT 39-46

Date _____

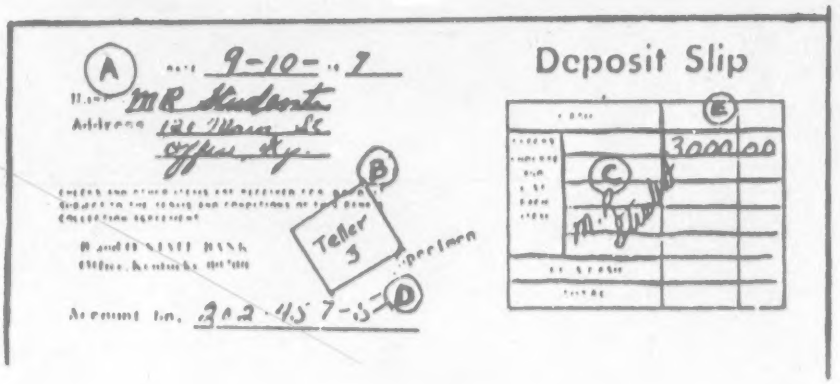
Directions: For each of the following questions, circle the letter of the best answer.

1. When examining a check for certification, which of the following is <u>not</u> true?

   A. The signature must be genuine.
   B. It must be written on the home bank.
   C. The payee must be named.
   D. Both amounts should agree.
   E. None of these

2. In preparing the following deposit slip which of the following points is in error?

   A. C
   B. D and E
   C. A
   D. B
   E. None of these

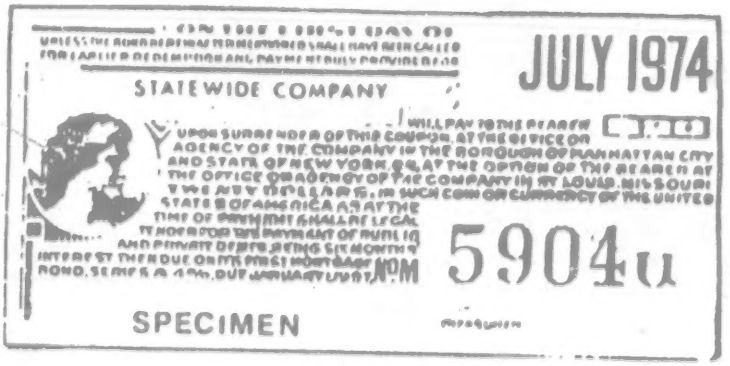


3. When cashing a traveler's check for $100.50, you would first:

   A. Dispense the large bills
   B. Stamp the face of the check with the teller's stamp
   C. Dispense the small bills
   D. Dispense the coins
   E. None of these

4. The following bond coupon is missing which of the characteristics of all sudden coupons?

   A. Signature of the treasurer of the issuing company.
   B. Maturity date of the bond
   C. The bond number
   D. The coupon number
   E. None of these



5. On the following certificate of deposit what point(s) is (are) in error?

A. 5 only
B. 3 only
C. 2 and 6
D. 4 and 5
E. None of these

CERTIFICATE OF DEPOSIT 268

Social Security No. 000-00-000 1 Date Current

Rate of Interest 8% 2 6 No. Months 12

Pay to the Order of M. R. Student 7 $ 3,000.00

3 Three Thousand ——— %₀₀ DOLLARS

Paid Annually ____ Quarterly X Semi ____ >5

Interest Mailed ☒ Interest Hold ☐ Interest Accumulated ☐ >4

John Jones
Bank Official Signature

6. On the following certificate of deposit what point(s) is (are) in error?

A. 4 only
B. 6 and 7
C. 2 and 8
D. 3 only
E. None of these

CERTIFICATE OF DEPOSIT 268

Social Security No. 000-00-0000 1

Cashed 9-17-7- $3000.00 D. R. Cashier

Date Current

Rate of Interest 7% 2

3

No. Months 36 9

Pay to the Order of M. R. Student 5 $ 3,000.00

4 THE SUM 3000 DOLS 00 CTS DOLLARS

Paid Annually X Quarterly ____ Semi ____ >6

Interest Mailed ☒ Interest Hold ☐ Interest Accumulated ☐ >7

96 8 Your Name
Bank Official Signature

7. Which of the following items is not required in order to prepare a cash advance on bank credit cards?

   A. Customer's bank credit card
   B. Customer's checking account number
   C. Cash advance drafts
   D. Credit card authorization number
   E. None of these

8. Money deposited by a customer for federal income tax is:

   A. Designated for the Federal Reserve Bank of Cleveland
   B. Placed in a safe deposit box
   C. Held at the local bank until April 15
   D. Placed in a special savings account.
   E. None of these

9. After the check is placed in the check writer the first step is to:

   A. Depress the clear key
   B. Depress the appropriate keys for the amount to be inscribed.
   C. Adjust the tabs
   D. Disengage the repeat key
   E. None of these

10. M. R. Student was issued a Series E bond on December 15, 1976. Today is January 15, 1977. M.R. Student wishes to cash his bond today.

    A. He must wait at least another month
    B. He may cash it today
    C. He must get the bank manager's approval
    D. Only the bond teller may cash it
    E. None of these

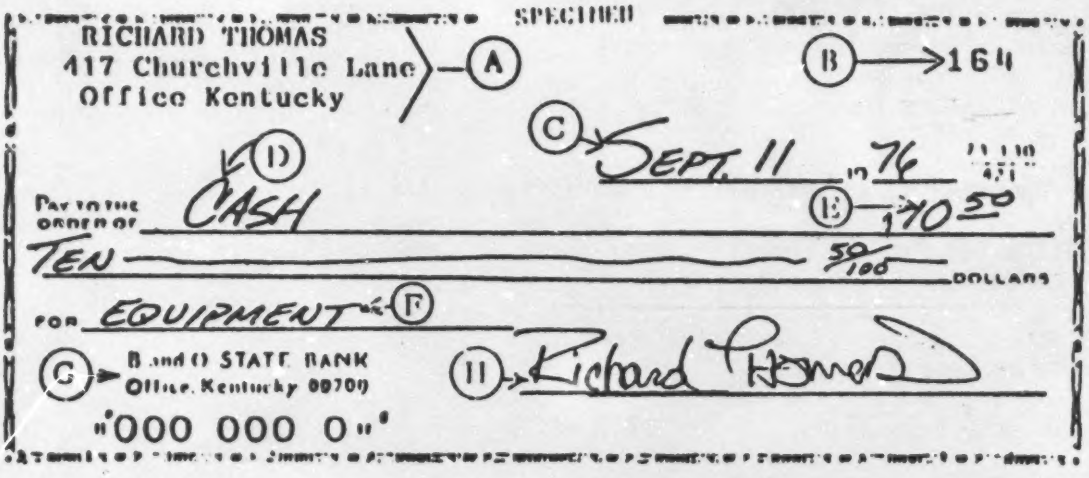
11. Which of the following is not the proper procedure for completion of a cash advance on a bank credit card?

    A. Return the credit card
    B. Return second copy of the Cash Advance Draft to the customer
    C. Stamp both copies of the Cash Advance Draft with the teller's number and the date.
    D. Count out the correct amount of cash using the proper method for dispensing cash.
    E. None of these

12. Which of the following is false with respect to coupon-bearing bonds?

    A. School districts may issue bonds to support building programs.
    B. A coupon bearing bond has the same face value at maturity.
    C. Like the Series E bonds, the interest on the bonds is collected upon redemption.
    D. Coupon bearing bonds are usually a long term investment.
    E. None of these

Assume today is September 11, 1976. You are employed for the First National City Bank. Your customer, Mr. Richard Thomas, wishes to have the following check certified:



13. Which of the following should you examine as negotiability points?

A. H, G, B
B. E, F, G
C. D, C, E
D. All of the above
E. None of the above

14. Which of the following is <u>incorrect</u>?

A. A
B. E
C. F
D. G
E. None of the above

15. Which of the following are not negotiability points?

A. C
B. D
C. E
D. G
E. None of the above

16. When a teller receives a Federal Tax Deposit computer card from a customer, the teller must:

A. notify the IRS regional office.
B. stamp the name of the bank in the designated spaces on the card.
C. place his signature in the lower right-hand corner of the card.
D. have the customer sign the card in the lower right-hand corner.
E. none of these

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   C. He must get the bank manager's approval
   D. Only the bond teller may cash it
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   A. Return the credit card
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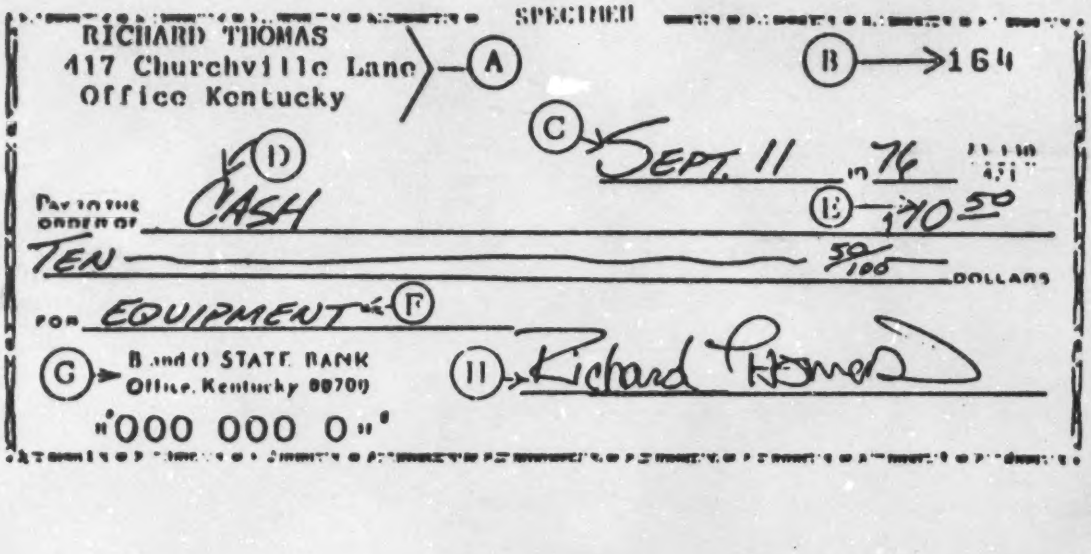

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B. E, F, G
C. D, C, E
D. All of the above
E. None of the above

14. Which of the following is <u>incorrect</u>?

A. A
B. E
C. F
D. G
E. None of the above

15. Which of the following are not negotiability points?

A. C
B. D
C. E
D. G
E. None of the above

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A. notify the IRS regional office.
B. stamp the name of the bank in the designated spaces on the card.
C. place his signature in the lower right-hand corner of the card.
D. have the customer sign the card in the lower right-hand corner.
E. none of these

17. Which of the following steps is not required to operate a checkwriter.

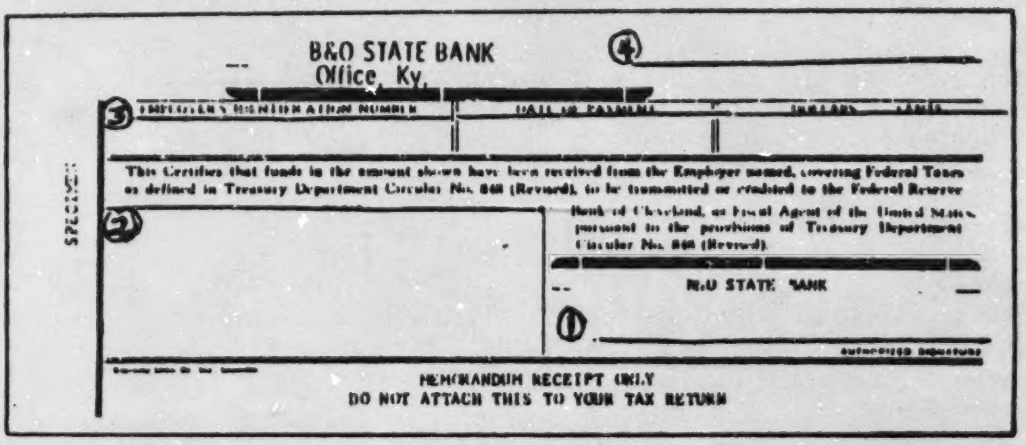
A. Insert check and align with tabs
B. Depress the lock mechanism
C. Depress appropriate amount key
D. Pull printing lever
E. None of these

18. The first step in issuing a certificate of deposit is to:

A. Examine the check for acceptability
B. Have the head teller approve the transaction
C. Receive the check in payment from the customer
D. Prepare a Cash-In slip
E. None of these

19. Below is a sample memorandum receipt for Tax Deposit. On which line does the customer place his/her signature?

A. 1
B. 2
C. 3
D. 4
E. None of these


B&O STATE BANK
Office, Ky.
4
3
DATE OF PAYMENT
This Certifies that funds in the amount shown have been received from the Employer named, covering Federal Taxes as defined in Treasury Department Circular No. 848 (Revised), to be transmitted or credited to the Federal Reserve
2
Bank of Cleveland, as Fiscal Agent of the United States pursuant to the provisions of Treasury Department Circular No. 848 (Revised).
B&O STATE BANK
1
MEMORANDUM RECEIPT ONLY
DO NOT ATTACH THIS TO YOUR TAX RETURN

20. When preparing a cashier's check, how many copies including the original are needed?

A. 2
B. 3
C. 1
D. 4
E. None of these

21. The space provided on Series E bonds, for the signature of the person identifying the owner (if necessary), is:

A. on the back, lower right hand corner
B. on the back, top left hand corner
C. on the back, lower left hand corner
D. on the front, lower right hand corner
E. none of these

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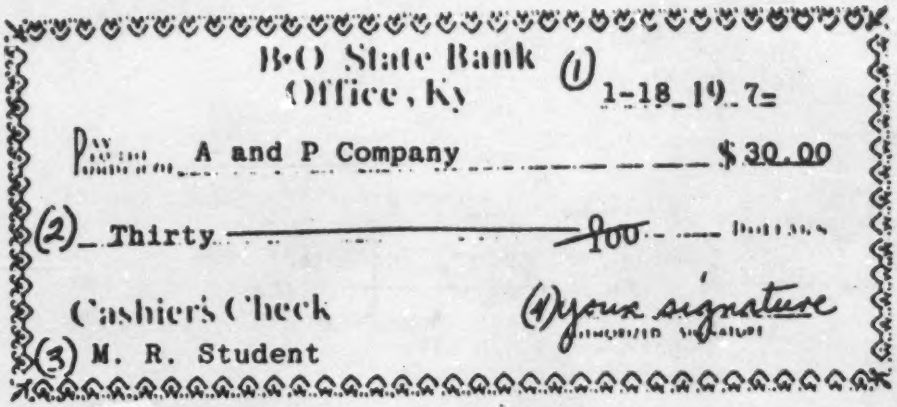
22. Today is January 18, 1977. M.R. Student gives you a $30.00 check for the amount of a cashier's check to be made out to the A & P Company. You have prepared the following cashier's check. Which item on the check is not correct?

A. 1
B. 2
C. 3
D. 4
E. None of these



23. Which of the following is not correct? After a check has been certified, the teller:

A. prepares a deposit slip
B. makes the deposit slip out to General Ledger
C. Gives the certified check and the original copy of the Certification Form to the customer
D. writes the amount of the check on the cash line of the deposit slip
E. none of these

24. Which types of savings bonds will you as a teller be dealing with?

A. Series H
B. Series E
C. Series H and E
D. Series F
E. None of these

25. Below is a list of forms that are involved when issuing a cashier's check. Which of the following forms are given to the customer?

A. 2 and 6
B. 1, 2, and 6
C. 1 and 2
D. 1 and 6
E. None of these

Form
Cashier's check (1)
Customer copy of Cashier's check (2)
Customer's check (gave teller a check for amount of Cashier's check) (3)
File copy of Cashier's check (4)
First copy of Cash-In ticket (gave teller cash for amount of Cashier's check) (5)
Second copy of Cash-In ticket (6)

26. Which of the following procedures would be incorrect when cashing a traveler's check?

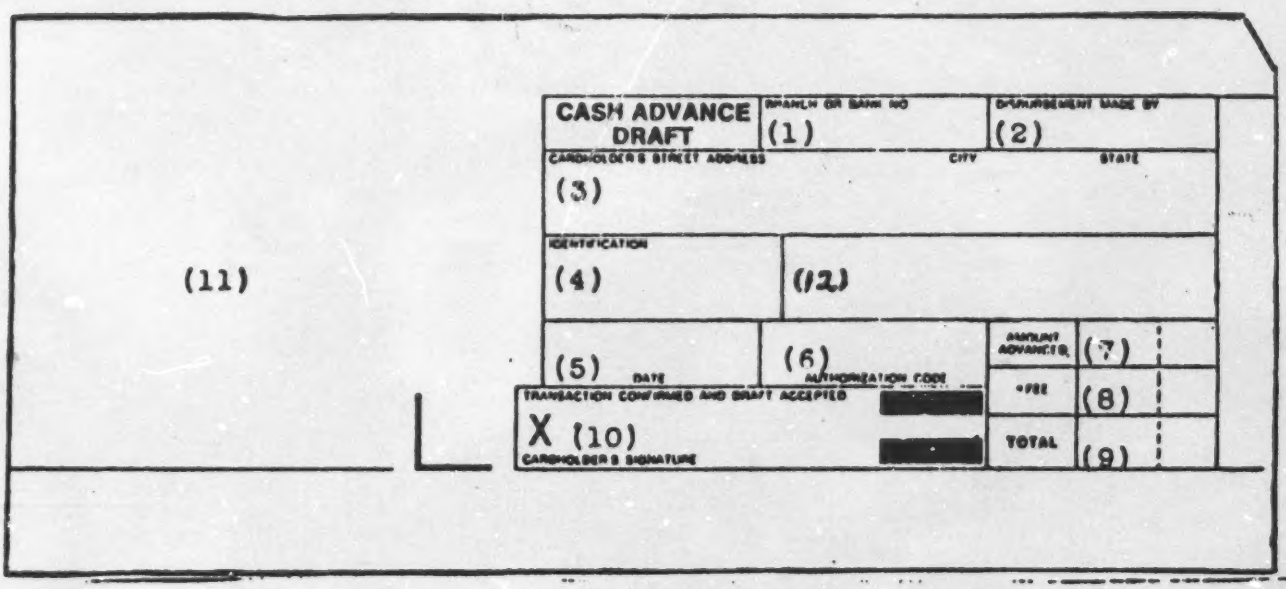
A. Have the customer sign the checks in the lower left hand corner
B. Verify the signatures
C. Stamp the face of each with the teller's stamp
D. Stamp or write in the date and name of the customer as payee
E. None of these

27. Which of the following steps is not appropriate for processing tax payments.

A. Receive customer's check
B. Prepare a certified check made out to IRS
C. Complete computer card
D. Prepare memorandum receipt
E. Perform bookkeeping tasks

28. On the blank cash advance draft shown below, where would the teller place his/her signature?

A. 4
B. 6
C. 2
D. 1
E. teller's signature is not required on a cash advance draft



29. On the blank cash advance draft shown above, point number 11 is for:

A. The identification card imprint
B. The teller's stamp
C. The credit card imprint
D. The seal of authorization
E. None of these

30. On the blank cash advance draft shown above, point number 12 is for:

A. The teller's stamp
B. The head teller's signature
C. The account number
D. The customer's social security number
E. None of these

31. A $50 bond was issued to Mrs. Student in December, 1970. Today is September 1, 1974. What would be the redemption value of bond, using the Table below, if she cashed it today.

A. $21.98
B. $43.96
C. Not eligible for payment
D. $50.00
E. None of these

U.S. SAVINGS BONDS, SERIES E—REDEMPTION VALUES BY DENOMINATION—SEPTEMBER 1

ISSUE YEAR	ISSUE MONTHS	$10	$25	$50	$75	$100	$200	$500	$1,000
1974	Aug. thru Sep.				[Not eligible for payment]				
	Apr. thru July		18.75	37.50	56.25	75.00	150.00	375.00	750.00
	Jan. thru Mar.		19.10	38.20	57.30	76.40	152.80	382.00	764.00
1973	Dec.		19.10	38.20	57.30	76.40	152.80	382.00	764.00
	Oct. thru Nov.		19.05	38.10	57.15	76.20	152.40	381.00	762.00
	June thru Sep.		19.56	39.12	58.68	78.24	156.48	391.20	782.40
	Apr. thru May		19.51	39.02	58.53	78.04	156.08	390.20	780.40
	Jan. thru Mar.		20.00	40.00	60.00	80.00	160.00	400.00	800.00
1972	Dec.		20.00	40.00	60.00	80.00	160.00	400.00	800.00
	Oct. thru Nov.		19.95	39.90	59.85	79.80	159.60	399.00	798.00
	June thru Sep.		20.45	40.90	61.35	81.80	163.60	409.00	818.00
	Apr. thru May		20.40	40.80	61.20	81.60	163.20	408.00	816.00
	Jan. thru Mar.		20.93	41.86	62.79	83.72	167.44	418.60	837.20
1971	Dec.		20.93	41.86	62.79	83.72	167.44	418.60	837.20
	Oct. thru Nov.		20.88	41.76	62.64	83.52	167.04	417.60	835.20
	June thru Sep.		21.44	42.88	64.32	85.76	171.52	428.80	857.60
	Apr. thru May		21.39	42.78	64.17	85.56	171.12	427.80	855.60
	Jan. thru Mar.		21.98	43.96	65.94	87.92	175.84	439.60	879.20
1970	Dec.		21.98	43.96	65.94	87.92	175.84	439.60	879.20
	Oct. thru Nov.		21.93	43.86	65.79	87.72	175.44	438.60	877.20
	June thru Sep.		22.50	45.16	67.74	90.32	180.64	451.60	903.20
	Apr. thru May		22.50	45.00	67.50	90.12	180.24	450.60	901.20
	Jan. thru Mar.		23.22	46.44	69.66	92.88	185.76	464.40	928.80
1969	Dec.		23.22	46.44	69.66	92.88	185.76	464.40	928.80
	Oct. thru Nov.		23.16	46.32	69.48	92.64	185.28	463.20	926.40
	June thru Sep.		23.88	47.76	71.64	95.52	191.04	477.60	955.20
	Apr. thru May		23.28	46.56	69.84	93.12	186.24	465.60	931.20
	Jan. thru Mar.		23.95	47.90	71.85	95.80	191.60	479.00	958.00

32. A cashier's check is a special check that is

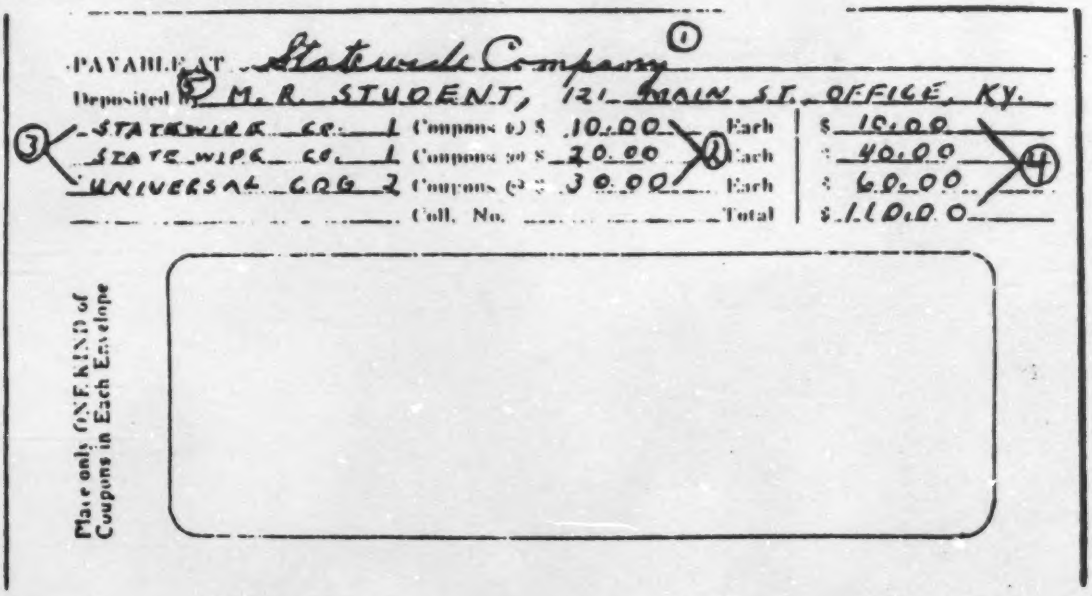
A. Drawn against the customer's account
B. Always purchased by the customer with cash
C. Drawn by a bank upon its own funds
D. Always purchased by a customer with a personal check
E. None of these

33. When cashing traveler's checks, married women:

A. Must sign and countersign their maiden name
B. Must sign and countersign their initials and last name
C. Must sign and countersign their given (first) and last name
D. Must sign and countersign their given (first) and maiden name
E. None of these

34. The following bond envelope contains errors at what point(s)?

A. 2, 3
B. 3, 4
C. 2 only
D. 4 only
E. None of these


PAYABLE AT Statewide Company ①
Deposited by ⑤ M. R. STUDENT, 121 MAIN ST. OFFICE, KY.
③ STATEWIDE CO. 1 Coupons @ $ 10.00 Each $ 10.00
STATE WIDE CO. 1 Coupons @ $ 20.00 ② Each $ 40.00 ④
UNIVERSAL COG 2 Coupons @ $ 30.00 Each $ 60.00
Coll. No. Total $ 110.00
Place only ONE KIND of Coupons in Each Envelope

35. What information is <u>not</u> contained on the back of a savings bond?

A. Payment information
B. Terms and Conditions
C. Request for Payment
D. Issue Date
E. None of these

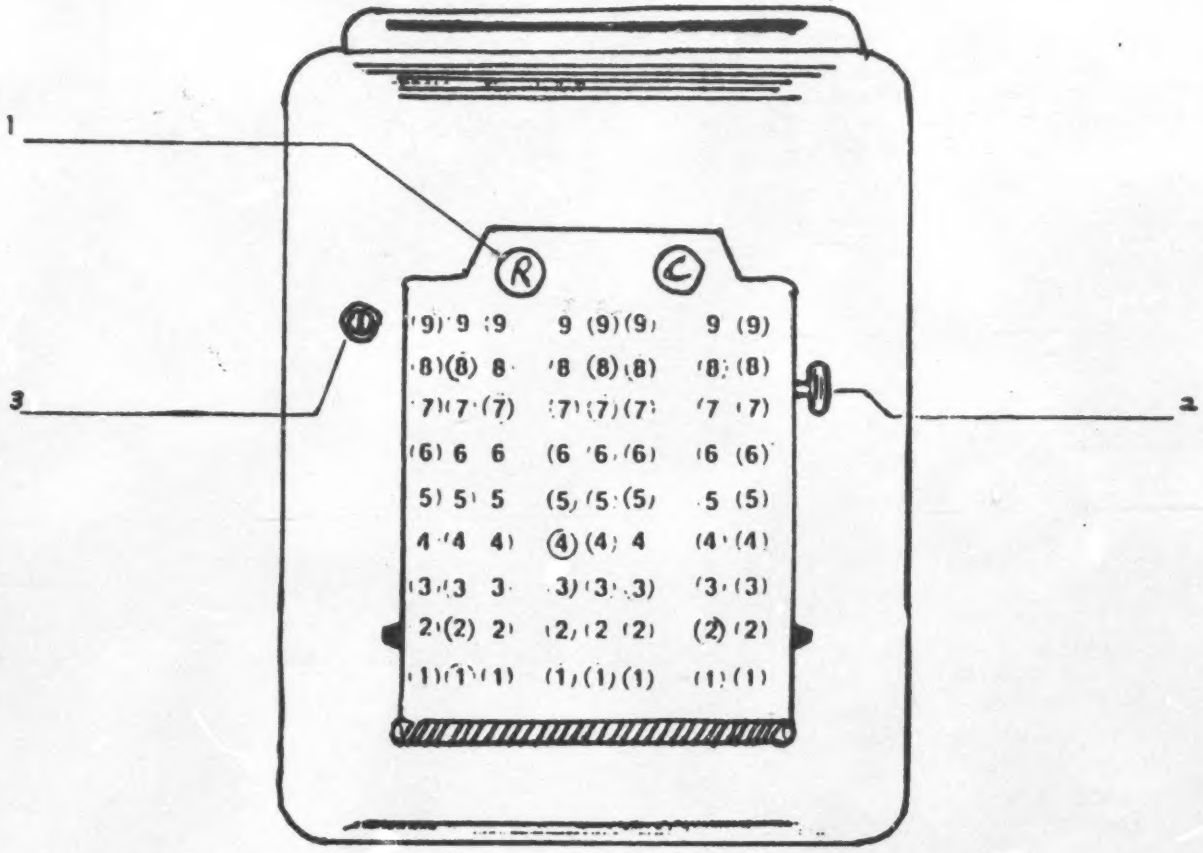
36. If, when verifying a traveler's check, you discover the signature is unacceptable, you should:

A. Call the police
B. Notify the proper bank official
C. Refer the customer to a notary
D. Ask for identification
E. None of these

37. When examining bond coupons for acceptability, which of the following does <u>not</u> apply.

A. All must show the same maturity date.
B. All must bear the name of the same issuer for each transaction.
C. All must be signed by the customer.
D. All must be presented on or after the date shown.
E. None of these

Using the illustration below, answer the following questions.



38. The above instrument is a

A. Check processor
B. Check voider
C. Check writer
D. Check reproducer

39. Key #1 is a

A. Repeat key
B. Printing lever
C. Printing key
D. Check slot
E. None of these

40. Key #3 is a

A. Repeat key
B. Lock and key mechanism
C. Check slot
D. Tabulator
E. None of these

41. Key #2 is a

A. Repeat key
B. Check slot
C. Clear key
D. Print lever
E. None of these

42. How many copies of the Purchaser's Application Form must be prepared when processing traveler's checks?

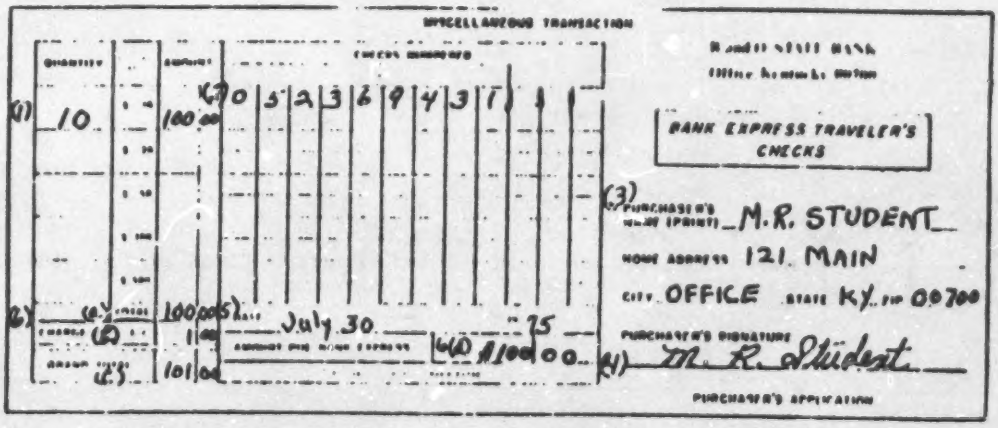
A. 1
B. 2
C. 3
D. 4
E. None of these

43. A copy of the Purchaser's Application Form is <u>not</u>:

A. Given to the issuing company
B. Given to the customer
C. Given to the Internal Revenue Service
D. Placed in the files
E. None of these

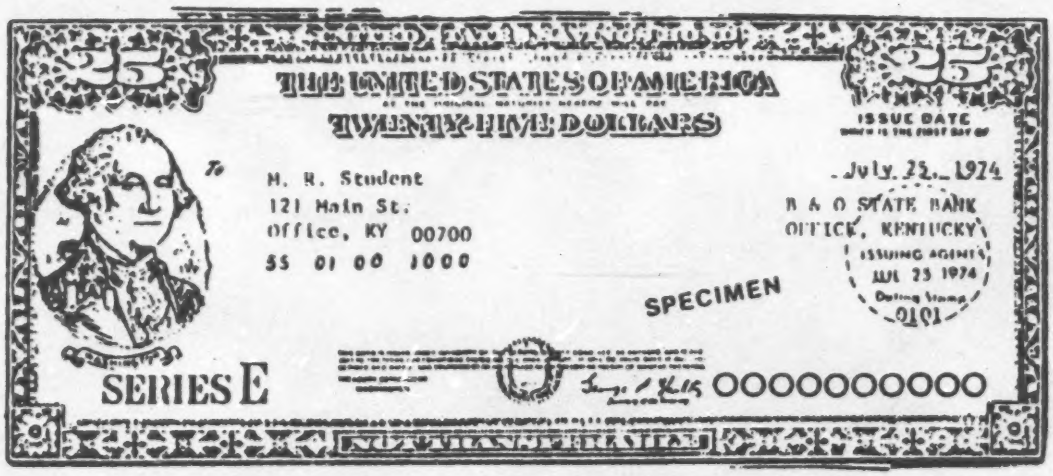
44. The following Purchaser Application Form has (an) error (s) at the following point (s):

A. 1 and 6a
B. 6c
C. 2 and 6d
D. 6b
E. None of these



45. The savings bond below has been prepared for a customer. What information is not in the correct location?

A. Name and address
B. Social security number
C. Name of the issuing bank
D. Bond number
E. None of these



46. When proving the total of the checks, you should:

A. Verify the amount with the head teller
B. Record the amount in the general ledger
C. List and total the amount on the adding machine and retain the ticket
D. All of these
E. None of these

47. In preparing a cashier's check, the teller must perform 6 steps. Four of the steps are given below. Which step is not correct?

A. Type the current date
B. Type the number amount next to the $ sign
C. Type the customer's name over the "authorized signature" line
D. Inscribe the written amount on the checkwriter
E. None of these

48. Which of the following statements is true regarding the procedure required in depositing bond coupons.

A. A Cash-In ticket is prepared because coupons are considered to be cash
B. The duplicate Cash-In and deposit slip are kept for the Proof Department
C. The original deposit slip is retained for balancing records
D. A Cash-Out receipt is sent to the issuing company
E. None of these

49. Which of the following is not found on a traveler's check?

A. The name of the issuing company
B. The date the check was issued
C. The check number
D. The signature of the issuing company official
E. None of these

50. When issuing certificates of deposit, copies of the certificate are not:

A. Furnished to the customer
B. Retained for the Proof Department
C. Retained for the general audit
D. Retained for the files of the bank
E. None of these

51. The certificate of deposit is completed in triplicate. A copy of the certificate does <u>not</u> go to:

A. The Proof Department
B. The customer
C. The Auditing Department
D. The bank files
E. None of these

52. Which of the following is <u>not</u> an option for the customer when he chooses the form of payment for his interest.

A. He may have the interest invested for him
B. He may have the interest mailed to his home
C. He may have the interest held for him
D. He may let the interest accumulate
E. None of these

53. In preparing certification forms for a certified check which of the following steps <u>is not</u> required?

A. Certification form number entered
B. Name of drawer supplied
C. Written number amounts supplied
D. Suplicate of this CF for customer's records
E. None of these

54. When preparing a bond for issue to a customer which of the following is prepared?

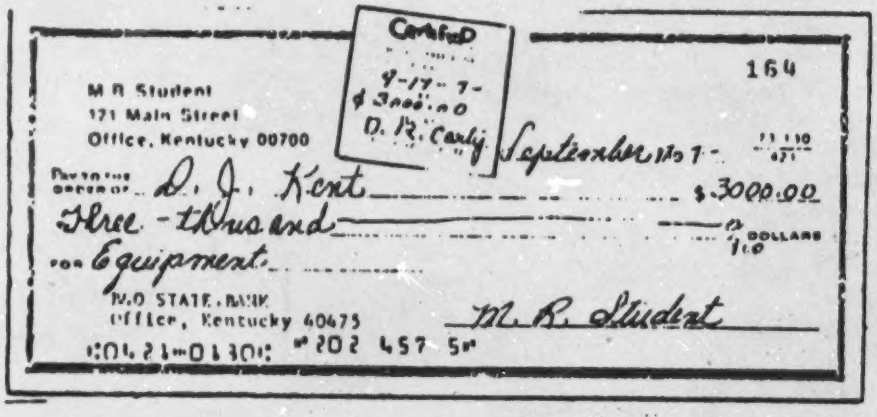
A. An original and specimen copy
B. An original and proof copy
C. An original and registration stub
D. An original and request for payment slip
E. None of these

55. When cashing a series E bond, which of the following procedures is incorrect?

A. Retain the duplicate copy of the Cash-Out ticket for the Proof Department
B. Retain duplicate copy of the Cash-Out ticket for Balance records
C. Enter the name of the bank on the face of the bond
D. Enter the teller number on the face of the bond
E. None of these

56. Assume that you have approved the check below for certification. Which of the following steps are required to process the check?

A. Stamp check with teller's stamp
B. Have customer complete certification form
C. Stamp check with certification stamp
D. Have customer complete deposit slip
E. None of these



57. In the above certified check what step(s) are necessary to complete the processing of the check?

A. A hold must be placed against the customer's account for the amount of certification
B. The checkwriter must be used to inscribe over customer's amount on the check
C. Secure the signature of the proper bank official
D. Make sure the check is drawn on the home bank
E. None of these

58. Which of the following is <u>not</u> standard procedure used when accepting bonds for deposit.

A. Place the envelope containing coupons in the cash drawer until they can be picked up by the head teller
B. Prepare the deposit slip
C. Prepare the Cash-Out ticket, in duplicate, for the total amount of coupons
D. Stamp both copies of the deposit slip with the teller's stamp
E. None of these

59. Which of the following does <u>not</u> appear on the face of the bond envelope after the customer has been paid?

A. The name of the issuing company
B. The customer's name
C. Value of the coupons
D. The teller's stamp
E. None of these

60. How many copies of the memorandum receipt, including the original, are completed following the completion of the computer card?

A. 1
B. 2
C. 3
D. 4
E. None of these

APPENDIX E

Performance Skill Test

Instructor's Final Checklist

PRESSURE TESTING THE COOLING SYSTEM

Check the student's performance in the following elements of pressure testing the cooling system.

Place an X in the appropriate box indicating not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, the item was impossible to complete, place an X in the "Not Applicable" box.

	Student Performance			
	Not Applicable	Not Accomplished	Partially Accomplished	Fully Accomplished
1. When pressure testing the radiator cap, the student:				
a. Carefully removed the radiator cap.	[ ]	[ ]	[ ]	[ ]
b. Correctly installed the cap on the tester	[ ]	[ ]	[ ]	[ ]
c. Obtained and recorded the correct reading	[ ]	[ ]	[ ]	[ ]
d. Obtained a test reading within one gradation of the instructor's.	[ ]	[ ]	[ ]	[ ]
e. Determined if the cap was usable.	[ ]	[ ]	[ ]	[ ]
2. When pressure testing the rest of the cooling system, the student:				
a. Installed the tester correctly.	[ ]	[ ]	[ ]	[ ]
b. Corrected or marked all leaks	[ ]	[ ]	[ ]	[ ]]
c. Operated the engine and observed the tester gauge for fluctuations.	[ ]	[ ]	[ ]	[ ]
d. Removed the tester and reinstalled the radiator cap . . .	[ ]	[ ]	[ ]	[ ]
e. Cleaned and stored tools and equipment.	[ ]	[ ]	[ ]	[ ]

APPENDIX F

Classroom Summary Report

Western Kentucky University
Competency-Based Vocational Education
Classroom Summary Report

Teacher:
School:
Subject:
Objective:

Student Name	Date Begin	Date Complete	Total Class Periods	Effort Rating (L)1 2 3 4 5(H)	Attitude Rating (P)1 2 3 4 5(E)	Letter Grade for Objective	Number of Trials	Class Periods Absent